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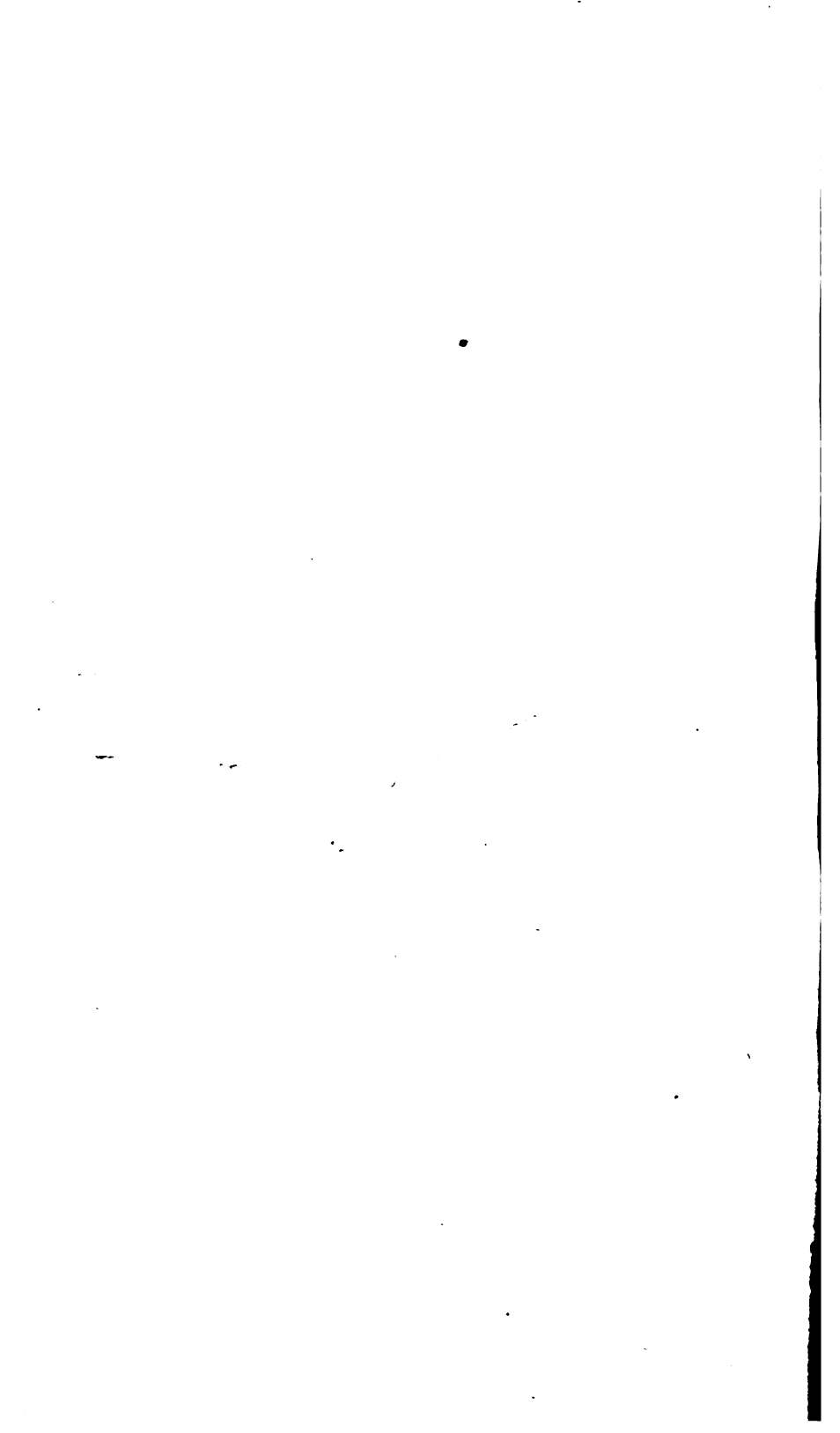
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# PROCEEDINGS OF THE ROYAL IRISH ACADEMY.

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PAPERS READ BEFORE THE ACADEMY.

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## I.

### QUATERNION INVARIANTS OF LINEAR VECTOR FUNCTIONS AND QUATERNION DETERMINANTS. BY CHARLES J. JOLY, M.A.

[Read JUNE 8, 1896.]

1. *Introductory.*—This Paper is, to a certain extent, supplementary to a Paper on “The Scalar Invariants of Two Linear Vector Functions,” which was published in vol. xxx. of the Transactions of the Royal Irish Academy. The notation of that Paper is followed as closely as possible, so as to facilitate occasional references to it.

The quaternion invariants being simply expressible as quotients of two determinants with vector constituents, it seems desirable to consider briefly such determinants, and to point out the geometrical meaning of their vanishing in certain simple cases.<sup>1</sup>

2. *Expansion of determinants with quaternion constituents.*—Because quaternion multiplication is not commutative, a determinant whose constituents are quaternions is unmeaning until some convention is adopted respecting its expansion. If it be agreed that the order of the constituents in the expansion shall follow the order of the rows, all indefiniteness is removed.

---

<sup>1</sup> Determinants, whose constituents are alternate numbers, have been considered by Clifford (“Mathematical Papers,” p. 277). If  $i_1$  and  $i_2$  are any two constituents,  $i_1^2 = i_2^2 = 0$ , and  $i_1 i_2 + i_2 i_1 = 0$ , these being the defining formulæ for alternate numbers.

Rev. J. D.

Rec. July 13, 1943

On this supposition,

$$\begin{vmatrix} p & q \\ p' & q' \end{vmatrix} = pq' - qp', \text{ but not } pq' - p'q;$$

$$\begin{vmatrix} p & q \\ p & q \end{vmatrix} = pq - qp = 2V.VpVq, \text{ and } \begin{vmatrix} p & p \\ q & q \end{vmatrix} = pq - pq = 0.$$

It is also obvious that if  $x$  is any scalar,

$$\begin{vmatrix} p & q \\ p' & q' \end{vmatrix} = \begin{vmatrix} p & xp + q \\ p' & xp' + q' \end{vmatrix}, \text{ but not } = \begin{vmatrix} p & q \\ xp + p' & xq + q' \end{vmatrix}.$$

Thus the columns may be treated as in ordinary determinants with scalar constituents; but it is not lawful to treat the rows in this manner. The former of these processes is consistent with the convention that the order of the constituents shall follow the order of the rows; the latter violates this convention.

3. *Multiplication of a quaternion and a scalar determinant.*—Again,

$$\begin{vmatrix} p & q \\ p' & q' \end{vmatrix} \cdot \begin{vmatrix} x & y \\ x' & y' \end{vmatrix} = \begin{vmatrix} px + qy & px' + qy' \\ p'x + q'y & p'x' + q'y' \end{vmatrix} = \begin{vmatrix} px + qx' & py + qy' \\ p'x + q'x' & p'y + q'y' \end{vmatrix},$$

the  $p$  and  $q$  being here, as elsewhere in this Paper, quaternions, and the  $x$  and  $y$  being scalars. Similar processes hold for determinants of any order.

Further, it is easy to see that, if  $p = w + ix + jy + kz$ , with similar expressions for the dotted letters,

$$\begin{vmatrix} p & p' & p'' \\ p & p' & p'' \\ p & p' & p'' \end{vmatrix} = \begin{vmatrix} 1 & i & j & k \\ 1 & i & j & k \\ 1 & i & j & k \end{vmatrix} \cdot \begin{vmatrix} w & x & y & z \\ w' & x' & y' & z' \\ w'' & x'' & y'' & z'' \end{vmatrix}.$$

4. *Determinants with identical rows.*—As geometrical examples, observe that if  $\alpha, \beta, \gamma, \delta$ , &c., are vectors,

$$\begin{vmatrix} \alpha & \beta \\ \alpha & \beta \end{vmatrix} = 2V\alpha\beta;$$

$$\begin{vmatrix} \alpha & \beta & \gamma \\ \alpha & \beta & \gamma \\ \alpha & \beta & \gamma \end{vmatrix} = 2(\alpha V\beta\gamma + \beta V\gamma\alpha + \gamma V\alpha\beta) = 6S\alpha\beta\gamma;$$

and

$$\begin{vmatrix} \alpha & \beta & \gamma & \delta \\ \alpha & \beta & \gamma & \delta \\ \alpha & \beta & \gamma & \delta \\ \alpha & \beta & \gamma & \delta \end{vmatrix} = 6 (\alpha S \beta \gamma \delta - \beta S \alpha \gamma \delta + \gamma S \alpha \beta \delta - \delta S \alpha \beta \gamma) = 0.$$

Determinants of this type enter largely into the treatment of hyperspace by means of a symbolic algebra analogous to quaternions.

Generally, also, the determinant of the fourth order whose rows are identical, and whose constituents are quaternions, vanishes identically. For, if  $p, q, r$ , and  $s$  are four arbitrary quaternions, the transformation

$$\begin{vmatrix} p & q & r & s \\ p & q & r & s \\ p & q & r & s \\ p & q & r & s \end{vmatrix} = \begin{vmatrix} p & q & r & 1 \\ p & q & r & 1 \\ p & q & r & 1 \\ p & q & r & 1 \end{vmatrix} \frac{aSp + bSq + cSr + dSs}{d}$$

(in which  $aVp + bVq + cVr + dVs = 0$ )

is the result of adding the first, second, and third columns multiplied by  $a, b$ , and  $c$  to the fourth multiplied by  $d$ , and then dividing by  $d$ .

Expanding the transformed determinant by the minors formed from the first and second rows, it is seen to vanish identically.

Again, if  $\phi_1, \phi_2, \phi_3$ , and  $\phi_4$  are any linear vector functions,

$$\begin{vmatrix} \phi_1 \alpha & \phi_1 \beta & \phi_1 \gamma & \phi_1 \delta \\ \phi_2 \alpha & \phi_2 \beta & \phi_2 \gamma & \phi_2 \delta \\ \phi_3 \alpha & \phi_3 \beta & \phi_3 \gamma & \phi_3 \delta \\ \phi_4 \alpha & \phi_4 \beta & \phi_4 \gamma & \phi_4 \delta \end{vmatrix} = 0.$$

##### 5. Geometrical interpretations concerning vanishing determinants.—

If

$$\begin{vmatrix} \alpha & \beta \\ \alpha' & \beta' \end{vmatrix} = 0, \text{ or } \alpha\beta' = \beta\alpha',$$

the four vectors are coplanar; the angle between  $\alpha$  and  $\beta'$  is equal to that between  $\beta$  and  $\alpha'$ ; and, if the vectors are coinitial, the triangle determined by  $\alpha$  and  $\beta'$  is equal to that determined by  $\beta$  and  $\alpha'$ .



If

$$\begin{vmatrix} 1 & 1 & 1 \\ a & \beta & \gamma \\ a & \beta & \gamma \end{vmatrix} = 0,$$

the vectors, if coinitial, terminate on a line. In fact,

$$\begin{vmatrix} \beta - a & \gamma - a \\ \beta - a & \gamma - a \end{vmatrix} = 0,$$

or  $\beta - a$  is parallel to  $\gamma - a$ .

Consider the quaternion

$$q = \begin{vmatrix} a' & \beta' & \gamma' \\ a & \beta & \gamma \\ a & \beta & \gamma \end{vmatrix} = 2(a'V\beta\gamma + \beta'V\gamma a + \gamma'Va\beta);$$

its conjugate is

$$Kq = \begin{vmatrix} a & \beta & \gamma \\ a & \beta & \gamma \\ a' & \beta' & \gamma' \end{vmatrix} = 2(V\beta\gamma \cdot a' + V\gamma a \cdot \beta' + Va\beta \cdot \gamma');$$

and its scalar may also be expressed as a determinant,

$$Sq = \begin{vmatrix} a & \beta & \gamma \\ a' & \beta' & \gamma' \\ a & \beta & \gamma \end{vmatrix} = (\gamma a' \beta - \beta a' \gamma) + (a \beta' \gamma - \gamma \beta' a) + (\beta \gamma' a - a \gamma' \beta),$$

the terms being grouped so that the pairs within the brackets are scalars. This may serve as a particular example of the effect of interchanging the rows.

If  $a'$ ,  $\beta'$ ,  $\gamma'$  are regarded as the points of application of the forces  $V\beta\gamma$ ,  $V\gamma a$ , and  $Va\beta$ , respectively,  $Vq = 0$  expresses that the sum of the (vector) moments of these forces with respect to the origin of vectors is zero, or that the resultant of the forces is a single force through the origin;  $Sq = 0$  expresses that the virial of the forces with respect to the origin is zero; and generally  $q = 0$  expresses, in Hamilton's phraseology, that the forces are equivalent to a single force, and that the origin is the *centre* of the forces, being that point for which their *total moment*  $q$  vanishes, or, more generally, is a minimum.<sup>1</sup>

<sup>1</sup> "Elements of Quaternions," Art. 414 (16). What is now called the *virial*, was called by Hamilton the *total tension*. By Art. 7 of the present Paper the relation of these six vectors may be illustrated by means of a quadric.

6. *Quaternion invariant, linear with respect to each of three linear vector functions, expressed as a quotient of determinants.*—Having, perhaps, sufficiently dwelt on the manipulation of these determinants with non-commutative constituents, I shall now show that

$$\begin{vmatrix} \phi_1 \alpha & \phi_1 \beta & \phi_1 \gamma \\ \phi_2 \alpha & \phi_2 \beta & \phi_2 \gamma \\ \phi_3 \alpha & \phi_3 \beta & \phi_3 \gamma \end{vmatrix} \frac{1}{S\alpha\beta\gamma} = q(\phi_1, \phi_2, \phi_3)$$

is a quaternion invariant of the three linear vector functions  $\phi$  in the sense that it is independent of the vectors  $\alpha$ ,  $\beta$ , and  $\gamma$ . This may be done by expressing  $\alpha$ ,  $\beta$ , and  $\gamma$  in terms of any three vectors such as  $i, j$ , and  $k$ , and using the methods indicated in Art. 3, or by direct expansion, which is to be preferred, as exhibiting more clearly the dependence of the determinant on the linear vector functions. Thus,

$$\begin{aligned} & q(\phi_1, \phi_2, \phi_3) S\alpha\beta\gamma \\ &= \phi_1 \alpha (\phi_2 \beta \phi_3 \gamma - \phi_2 \gamma \phi_3 \beta) + \phi_1 \beta (\phi_2 \gamma \phi_3 \alpha - \phi_2 \alpha \phi_3 \gamma) \\ & \quad + \phi_1 \gamma (\phi_2 \alpha \phi_3 \beta - \phi_2 \beta \phi_3 \alpha) \\ &= I_3(\phi_1, \phi_2, \phi_3) S\alpha\beta\gamma \\ &+ \phi_1 \alpha S(\phi_2 \beta \phi_3 \gamma - \phi_2 \gamma \phi_3 \beta) + \phi_1 \beta S(\phi_2 \gamma \phi_3 \alpha - \phi_2 \alpha \phi_3 \gamma) \\ & \quad + \phi_1 \gamma S(\phi_2 \alpha \phi_3 \beta - \phi_2 \beta \phi_3 \alpha) \\ &- \phi_2 \alpha S(\phi_3 \beta \phi_1 \gamma - \phi_3 \gamma \phi_1 \beta) - \phi_2 \beta S(\phi_3 \gamma \phi_1 \alpha - \phi_3 \alpha \phi_1 \gamma) \\ & \quad - \phi_2 \gamma S(\phi_3 \alpha \phi_1 \beta - \phi_3 \beta \phi_1 \alpha) \\ &+ \phi_3 \alpha S(\phi_1 \beta \phi_2 \gamma - \phi_1 \gamma \phi_2 \beta) + \phi_3 \beta S(\phi_1 \gamma \phi_2 \alpha - \phi_1 \alpha \phi_2 \gamma) \\ & \quad + \phi_3 \gamma S(\phi_1 \alpha \phi_2 \beta - \phi_1 \beta \phi_2 \alpha), \end{aligned}$$

in which

$$I_3(\phi_1, \phi_2, \phi_3) = \frac{\sum S\phi_1 \alpha (\phi_2 \beta \phi_3 \gamma + \phi_3 \beta \phi_2 \gamma)}{S\alpha\beta\gamma}$$

is a scalar invariant, noticed in Art. 22 of the Paper already referred to.

Now, if  $\phi_3'$  is the conjugate of  $\phi_3$ ,

$$S(\phi_1 \beta \phi_3 \gamma - \phi_2 \gamma \phi_3 \beta) = S(\phi_3' \phi_3 - \phi_3' \phi_3) \beta \cdot \gamma = 2S\eta_{23}\beta\gamma,$$

if  $\eta_{23}$  is the spin vector or non-conjugate part of  $\phi_3' \phi_3$ .<sup>\*</sup> Hence, if  $\Sigma$  denotes summation for cyclical transposition of  $\alpha$ ,  $\beta$ , and  $\gamma$ ,

$$\Sigma \phi_1 \alpha S(\phi_2 \beta \phi_3 \gamma - \phi_2 \gamma \phi_3 \beta) = 2\Sigma \phi_1 \alpha S\eta_{23}\beta\gamma = 2\phi_1 \eta_{23} \cdot S\alpha\beta\gamma.$$

<sup>\*</sup> The vector functions  $\phi_3' \phi_3$  and  $\phi_3 \phi_3'$  are conjugate, since

$$S\lambda \phi_3' \phi_2 \mu = S\phi_3 \lambda \phi_2 \mu = S\mu \phi_2' \phi_3 \lambda.$$

The quaternion is, consequently, reduced to

$$q(\phi_1, \phi_2, \phi_2) = 2(\phi_1\eta_{22} - \phi_2\eta_{21} + \phi_2\eta_{12}) + l_2(\phi_1, \phi_2, \phi_2),$$

and is therefore, as has been announced, independent of the vectors  $\alpha$ ,  $\beta$ , and  $\gamma$ .

Occasionally, the vector  $2\eta_{22}$  may be designated by

$$V(\phi_2'\phi_2 - \phi_2'\phi_2),$$

but care must be taken to distinguish between

$$\phi_1 V(\phi_2'\phi_2 - \phi_2'\phi_2) \cdot \rho = 2\phi_1\eta_{22} \cdot \rho,$$

and

$$\phi_1(\phi_2'\phi_2 - \phi_2'\phi_2)\rho = 2\phi_1 V\eta_{22}\rho.$$

7. *Special cases of this invariant.*—As a particular case of the preceding invariant, let  $\phi_1 = \phi_3$ , and then

$$q(\phi_1, \phi_3, \phi_1) = l_3(\phi_1, \phi_2, \phi_1).$$

For

$$\eta_{21} + \eta_{12} = 0, \quad \text{and} \quad \eta_{11} = 0,$$

and the vector part vanishes. This might have been predicted, from an example in Art. 5. If  $\phi_2 = \phi_3$ ,

$$q(\phi_1, \phi_2, \phi_2) = l_2(\phi_1, \phi_2, \phi_2) + 4\phi_2\eta_{12};$$

hence, in particular, if  $\phi_2 = 1$ ,

$$q(\phi_1, 1, 1) = l_2(\phi_1, 1, 1) + 4\epsilon_1;$$

in which expression, remembering that

$$2\eta_{12} = V(\phi_2'\phi_1 - \phi_1'\phi_2),$$

$\epsilon_1$  is the spin-vector of  $\phi_1$ .

Now,

$$l_2(\phi_1, 1, 1) = 2m_1 \quad \text{if} \quad \phi_1^2 - m_1\phi_1^2 + m_2\phi_1 - m_3 = 0,$$

and, therefore,

$$q(\phi_1, 1, 1) = 2(m_1 + 2\epsilon_1),$$

which is Hamilton's first invariant. Also, in a similar manner,

$$\begin{aligned} q(\phi_1, \phi_1, 1) &= l_3(\phi_1, \phi_1, 1) + 4\phi_1\epsilon_1 \\ &= 2(m_2 + 2\phi_1\epsilon_1); \end{aligned}$$

and this is Hamilton's second quaternion invariant.<sup>1</sup>

$q(\phi_1, \phi_1, \phi_1)$  is easily seen to be equal to  $6m_3$ .

---

<sup>1</sup> See his "Elements of Quaternions," Art. 349.

8. On interchange of rows, six quaternion invariants are found; these are equivalent to one scalar, and three vector invariants.—The effect of the interchange of rows was partially considered in the 5th Article. Closely connected with this is the effect of the interchange of  $\phi_1$ ,  $\phi_2$ , and  $\phi_3$  in the invariant  $q(\phi_1, \phi_2, \phi_3)$ . In order to see the connexion, it is only necessary to remark, that if

$$a_1 = \phi_1 a, \quad a_2 = \phi_2 a, \quad \text{and} \quad a_3 = \phi_3 a,$$

with similar meanings for  $\beta_1, \beta_2, \beta_3$ , and  $\gamma_1, \gamma_2, \gamma_3$ ,

$$q(\phi_1, \phi_2, \phi_3) S a \beta \gamma = \begin{vmatrix} a_1 & \beta_1 & \gamma_1 \\ a_2 & \beta_2 & \gamma_2 \\ a_3 & \beta_3 & \gamma_3 \end{vmatrix}.$$

For brevity, let  $l_3(\phi_1, \phi_2, \phi_3)$  be denoted by  $l_3$ , as in this scalar part transposition of the functions is without effect;<sup>1</sup> then

$$q(\phi_1, \phi_2, \phi_3) = l_3 + 2(\phi_1 \eta_{23} - \phi_2 \eta_{31} + \phi_3 \eta_{12}),$$

$$q(\phi_3, \phi_2, \phi_1) = l_3 - 2(\phi_1 \eta_{23} - \phi_2 \eta_{31} + \phi_3 \eta_{12});$$

$$q(\phi_2, \phi_3, \phi_1) = l_3 + 2(\phi_1 \eta_{23} + \phi_2 \eta_{31} - \phi_3 \eta_{12}),$$

$$q(\phi_1, \phi_3, \phi_2) = l_3 - 2(\phi_1 \eta_{23} + \phi_2 \eta_{31} - \phi_3 \eta_{12});$$

and

$$q(\phi_3, \phi_1, \phi_2) = l_3 + 2(-\phi_1 \eta_{23} + \phi_2 \eta_{31} + \phi_3 \eta_{12}),$$

$$q(\phi_2, \phi_1, \phi_3) = l_3 - 2(-\phi_1 \eta_{23} + \phi_2 \eta_{31} + \phi_3 \eta_{12}).$$

The quaternions are here grouped in conjugate pairs, and the six different values of determinants of the third order formed by the same three rows in different orders are exhibited.

9. Relations connecting vector invariants. Two reducing formulæ.—The six invariants lately considered are equivalent to one scalar and three vector invariants. I propose now to consider some reductions and relations concerning vector invariants.

Retaining the suffix notation, let  $\epsilon_1$  denote the spin-vector of  $\phi_1$ ,  $\epsilon_2$  that of  $\phi_2$ , and  $\epsilon_{12}$  and  $\epsilon_{21}$  those of  $\phi_1 \phi_2$  and  $\phi_2 \phi_1$ , respectively. Let  $\phi_1$  satisfy the cubic

$$\phi_1^3 - m_1 \phi_1^2 + m_2 \phi_1 - m_3 = 0,$$

and let  $\phi_2$  satisfy

$$\phi_2^3 - m_1' \phi_2^2 + m_2' \phi_2 - m_3' = 0.$$

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<sup>1</sup> This may be verified by expansion of the determinants, but it is otherwise obvious.

For an arbitrary vector  $\rho$ ,

$$\begin{aligned}(\phi_1\phi_2 - \phi_2'\phi_1')\rho &= [\phi_1' + (\phi_1 - \phi_1')]\phi_2\rho - \phi_2'[\phi_1 - (\phi_1 - \phi_1')]\rho \\&= (\phi_1'\phi_2 - \phi_2'\phi_1)\rho + 2V_{\epsilon_1}\phi_2\rho + 2\phi_2'V_{\epsilon_1}\rho \\&= 2V_{\eta_{11}}\rho + 2(m_1'V_{\epsilon_1}\rho - V\phi_2\epsilon_1\rho); \end{aligned}$$

using the fundamental relation

$$m_1'V_{\epsilon_1}\rho = V_{\epsilon_1}\phi_2\rho + V\phi_2\epsilon_1\rho + \phi_2'V_{\epsilon_1}\rho,$$

and retaining the signification of  $\eta_{11}$ .

But  $\rho$  is arbitrary, and  $(\phi_1\phi_2 - \phi_2'\phi_1')\rho = 2V_{\epsilon_{12}}\rho$ , and consequently,

$$\epsilon_{12} = -\eta_{12} + m_1'\epsilon_1 - \phi_2\epsilon_1.$$

Interchanging the functions  $\phi_1$  and  $\phi_2$ , the similar relation

$$\epsilon_{21} = +\eta_{12} + m_1\epsilon_2 - \phi_1\epsilon_2$$

is found.

If  $\phi_1 = \phi_2$ , as a particular case of these relations

$$\frac{1}{2}V(\phi_1^2 - \phi_1'^2) = m_1\epsilon_1 - \phi_1\epsilon_1.$$

10. *On cyclical transposition of a product of functions.*—Adding the two relations found in the last Article,

$$\epsilon_{12} + \epsilon_{21} = m_1'\epsilon_1 + m_1\epsilon_2 - \phi_2\epsilon_1 - \phi_1\epsilon_2;$$

this formula will be found to be of importance in the reduction of the number of vector invariants. By its means the spin-vector of any function  $\theta\phi$  may be expressed in terms of that of  $\phi\theta$ , and of the results of operation on the spin-vectors of  $\theta$  and  $\phi$ . More generally by repeated application of the formula, the spin-vectors of any cyclical group of functions such as  $\phi^2\theta$ ,  $\phi\theta\phi$ ,  $\theta\phi^2$  (in which the symbols  $\theta$  and  $\phi$  are cyclically transposed) may be expressed in terms of the spin-vector of any one of the functions ( $\phi^2\theta$  suppose) and in terms of the results of operation on the spin-vectors of simpler functions.

11. *When a square enters into the product, the spin-vectors are reducible.*—Replacing  $\phi_2$  by  $\phi_2\phi_1$  in the first formulæ of Art. 9 (which may be written in the form

$$\begin{aligned}V(\phi_1\phi_2 - \phi_2'\phi_1') &= V(\phi_1'\phi_2 - \phi_2'\phi_1) + m_1(\phi_2) \cdot V(\phi_1 - \phi_1') - \phi_2V(\phi_1 - \phi_1') \\V(\phi_1\phi_2\phi_1 - \phi_1'\phi_2'\phi_1') &= V(\phi_1'\phi_2\phi_1 - \phi_1'\phi_2'\phi_1') \\&\quad + m_1(\phi_2\phi_1)V(\phi_1 - \phi_1') - \phi_2\phi_1V(\phi_1 - \phi_1') \end{aligned}$$

is the result,  $m_1(\phi_2\phi_1)$  denoting the  $m_1$  invariant of  $\phi_2\phi_1$ .

$$\begin{aligned}\text{Now } (\phi_1' \phi_2 \phi_1 - \phi_1' \phi_2' \phi_1) \rho &= \phi_1' (\phi_2 - \phi_2') \phi_1 \rho \\ &= 2\phi_1' V \epsilon_2 \phi_1 \rho = 2m_2 V \phi_1^{-1} \epsilon_2 \rho,\end{aligned}$$

and therefore as  $\rho$  is arbitrary,

$$V(\phi_1' \phi_2 \phi_1 - \phi_1' \phi_2' \phi_1) = 2m_2 \phi_1^{-1} \epsilon_2 = 2(\phi_1^2 - m_1 \phi_1 + m_2) \epsilon_2.$$

The spin-vector of  $\phi_1' \phi_2 \phi_1$  is consequently reduced to a result of operation on the spin-vector of  $\phi_2$ .

To see the full bearing of this, observe that by a formula lately written,

$$V(\phi_1 \phi_2 \phi_1 - \phi_1' \phi_2' \phi_1') = 2m_2 \phi_1^{-1} \epsilon_2 + 2m_1 (\phi_2 \phi_1) \cdot \epsilon_1 - 2\phi_2 \phi_1 \epsilon_1.$$

Thus the spin-vector of  $\phi_1 \phi_2 \phi_1$  is likewise reduced to the results of operation on the spin-vectors of simpler functions, and therefore, by the last Article, the spin-vectors of  $\phi_1^2 \phi_2$  and  $\phi_2 \phi_1^2$  are similarly reducible. Generally, therefore, having formed from any number of functions  $\phi$  a function  $\Phi = \phi_1 \phi_2 \phi_3 \phi_4$  &c., the spin-vectors of all the functions formed by cyclically transposing the  $\phi$  in  $\Phi$  are, by the last Article, linearly and invariantly expressible in terms of the spin-vector of  $\Phi$ , and in terms of the results of operation on the spin-vectors of simpler functions; and, by the present Article, if any one of the  $\phi$  is consecutively repeated in  $\Phi$ , the spin-vectors of the functions of the group are all expressible in terms of the results of operation on the spin-vectors of simpler functions.

12. *This is also the case when the same function occurs twice in the product.*—For two functions,  $\phi_1$  and  $\phi_2$ , the vector invariants are the results of operation on the two spin-vectors  $\epsilon_1$  and  $\epsilon_2$ , and on *one* of the three vectors  $\epsilon_{12}$ ,  $\epsilon_{21}$ , and  $\eta_{12}$ . In this case the cyclical group consists of the functions  $\phi_1 \phi_2$  and  $\phi_2 \phi_1$ . The group  $\phi_1 \phi_2 \phi_1 \phi_2$  gives a reducible invariant. Before proceeding to the consideration of three functions, another general formula of reduction will be given.

If  $\theta$  and  $\psi$  are any linear vector functions, the vector invariants of the cycle  $\phi_1 \theta \phi_1 \psi$  are reducible. A function of the cycle is  $\psi \phi_1 \theta \phi_1$  and

$$\begin{aligned}V(\psi \phi_1 \cdot \theta \phi_1 - \phi_1' \theta' \cdot \phi_1' \psi') &= V(\phi_1' \psi' \cdot \theta \phi_1 - \phi_1' \theta' \cdot \psi \phi_1) \\ &+ m_1 (\theta \phi_1) V(\psi \phi_1 - \phi_1' \psi') - \theta \phi_1 V(\psi \phi_1 - \phi_1' \psi'),\end{aligned}$$

by a formula of Art. 9 or 11, the functions  $\psi \phi_1$  and  $\theta \phi_1$  replacing  $\phi_1$  and  $\phi_2$ .

Now, as in the last article,

$$\begin{aligned}(\phi_1' \psi' \cdot \theta \phi_1 - \phi_1' \theta' \cdot \psi \phi_1) \rho &= \phi_1' (\psi' \theta - \theta' \psi) \phi_1 \rho \\ &= m_2 (\phi_1) \cdot V \cdot \phi_1^{-1} V(\psi' \theta - \theta' \psi) \cdot \rho,\end{aligned}$$

$$\text{so } V(\phi_1' \psi' \cdot \theta \phi_1 - \phi_1' \theta' \cdot \psi \phi_1) = m_2 (\phi_1) \cdot \phi^{-1} V(\psi' \theta - \theta' \psi),$$

and the theorem just stated is proved.

Hence, for any number of functions, it is only necessary to consider the cycles in which no function occurs twice.

For three functions these cycles are to be derived from

$$\phi_2\phi_3, \phi_3\phi_1, \phi_1\phi_2; \phi_1\phi_2\phi_3 \text{ and } \phi_3\phi_2\phi_1.$$

13. *Search for new vector invariants may be limited to the consideration of spin-vectors.*—There is no difficulty in seeing that the vector parts of any of the quaternions

$$q(\phi_1\phi_2\phi_3, 1, 1), \quad q(\phi_2\phi_3, \phi_1, 1), \quad q(\phi_1, \phi_2, \phi_3), \quad \&c.,$$

are linear and invariant functions of the spin-vectors of the five cycles of the last article, and of the spin-vectors of  $\phi_1$ ,  $\phi_2$ , and  $\phi_3$ . The vectors involved in  $q(\phi_2\phi_3, \phi_1, 1)$  are

$$V(\phi_1'\phi_2\phi_3 - \phi_3'\phi_2'\phi_1), \quad \phi_1 V(\phi_2\phi_3 - \phi_3'\phi_2'), \quad \text{and} \quad \phi_2\phi_3 V(\phi_1 - \phi_1').$$

The first of these is, by Art. 9, expressible in terms of

$$V(\phi_2\phi_3\phi_1 - \phi_1'\phi_3'\phi_2'),$$

and results of operation.

Hence, in searching for new vector invariants, it is legitimate to investigate the spin-vectors alone of the functions formed by multiplying the given functions together. There is no need to investigate separately the spin-vectors of products such as  $\phi_1'\phi_2\phi_3$ .

14. *Reducing systems of quaternion invariants.*—The “reducing systems” of the previous Paper may be used in the more general case of quaternion invariants. It is evident, from the constitution of these functions, that

$$\begin{aligned} xq(\psi_1\phi^2\psi_2, \psi_3, \psi_4) + yq(\psi_1\phi\psi_2, \psi_3, \psi_4) + zq(\psi_1\psi_2, \psi_3, \psi_4) \\ = q[\psi_1(x\phi^2 + y\phi + z)\psi_2, \psi_3, \psi_4], \end{aligned}$$

in which  $x$ ,  $y$ , and  $z$  are scalars, and  $\phi$  and the  $\psi$  linear vector functions. Now, as  $\phi$  satisfies a cubic equation

$$\phi^3 - m_1\phi^2 + m_2\phi - m_3 = 0,$$

any rational algebraic function of  $\phi$  may be reduced to the form

$$f(\phi) = x\phi^2 + y\phi + z,$$

and therefore

$$q(\psi_1 f(\phi) \psi_2, \psi_3, \psi_4)$$

is reducible in terms of three simpler quaternions.

15. *Locus of axes of  $\phi_1 + t\phi_2$ .*—A few properties of the system of linear vector functions  $\phi_1 + t\phi_2$  may here be noticed. If  $g_1, g_2$ , and  $g_3$  are the roots, and  $\rho_1, \rho_2$ , and  $\rho_3$  the axes corresponding to a given value of  $t$ , the vector equation

$$\phi_1\rho + t\phi_2\rho = g\rho$$

is satisfied for  $\rho = \rho_1$ , and  $g = g_1$ , &c. Remembering that  $g_1$  is a root of the cubic

$$g^3 - g^2m_1(\phi_1 + t\phi_2) + gm_2(\phi_1 + t\phi_2) - m_3(\phi_1 + t\phi_2) = 0,$$

the vector equation denotes a cubic cone, the locus of axes of  $\phi_1 + t\phi_2$ ; the scalar equation of this cone is

$$S\rho\phi_1\rho\phi_2\rho = 0 = f.$$

The locus of axes of the conjugate system  $\phi_1' + t\phi_2'$  is given by

$$\phi_1'\rho + t\phi_2'\rho = g\rho, \quad \text{or by} \quad S\rho\phi_1'\rho\phi_2'\rho = 0 = f'.$$

If  $\rho_1'$  is the edge of the cone  $f'$ , determined by  $t$  and  $g_1$ , it is at right angles to two edges  $\rho_2$  and  $\rho_3$  of the cone  $f$  which correspond to the same value of  $t$ ; the vector  $V\rho_1'\phi_1'\rho_1'$  or  $V\rho_1'\phi_2'\rho_1'$  is the third edge of  $f$  at right angles to  $\rho_1'$ .\*

Thus the reciprocal of the cone  $f'$  is the envelope of the principal planes of the system of functions  $\phi_1 + t\phi_2$ . This envelope being of the third class, through any line through the origin it is possible to draw three principal planes of the system of functions  $\phi_1 + t\phi_2$ .

Equating to zero the discriminant of the cubic in  $g$ , it appears that six functions of the system have double roots and coincident axes; for this discriminant is a sextic in  $t$ . The cone  $f$  being of the sixth class, and the reciprocal of  $f'$  of the third, eighteen principal planes of the system  $\phi_1 + t\phi_2$  are tangent to  $f$ , as well as to the reciprocal of  $f'$ . Six of these planes evidently touch  $f$  along the six coincident axes, and the other twelve planes probably correspond to coincidence of  $\rho_2$  (or of  $\rho_3$ ) with  $V\rho_1'\phi_1\rho_1'$ .

The planes joining corresponding edges of the two cones ( $\rho_1, \rho_1'$ ;  $\rho_2, \rho_2'$ ; and  $\rho_3, \rho_3'$ ), which answer to the same value of  $t$ , intersect on the orthocentric line

$$V(\epsilon_1 + t\epsilon_2)(\phi_1 + t\phi_2)(\epsilon_1 + t\epsilon_2).$$

As  $t$  varies, this line describes a cubic cone.

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\* A particular case of this cone was considered in Art. 15 of my Paper on "The Scalar Invariants of Two Linear Vector Functions" (*loc. cit.*, p. 721).



In the particular case in which  $\phi_1$  and  $\phi_2$  are self-conjugate, the cones  $f$  and  $f'$  coincide, and every generator of the single cone is at right angles to two other generators likewise mutually perpendicular.

As a solid is strained from any configuration to any other by gradually increasing a strain of given type, the locus of the unrotated lines is a cubic cone.

16. *Homographic transformations.*—Not only is the cone  $S\rho\phi_1\rho\phi_2\rho=0$  the locus of axes of  $\phi_1 + t\phi_2$ , but it is also the locus of axes of the system of functions

$$(a\phi_1 + b\phi_2 + c)^{-1}(a'\phi_1 + b'\phi_2 + c'),$$

$a, b, c, a', b'$ , and  $c'$  being arbitrary scalars.

For the equation of the cone  $f$  may be written in the form

$$S(a\phi_1 + b\phi_2 + c)\rho(a'\phi_1 + b'\phi_2 + c')\rho(a''\phi_1 + b''\phi_2 + c'')\rho = 0,$$

and then in the form

$$S\rho(a\phi_1 + b\phi_2 + c)^{-1}(a'\phi_1 + b'\phi_2 + c')\rho(a\phi_1 + b\phi_2 + c)^{-1}(a''\phi_1 + b''\phi_2 + c'')\rho = 0,$$

or

$$S\rho\psi_1\rho\psi_2\rho = 0.$$

To each cone  $f$  corresponds an infinite number of cones  $f'$ . If

$$\psi_1 = (a\phi_1 + b\phi_2 + c)^{-1}(a'\phi_1 + b'\phi_2 + c'),$$

its conjugate is

$$\psi_1' = (a'\phi_1' + b'\phi_2' + c')(a\phi_1 + b\phi_2 + c)^{-1};$$

but now the cone corresponding to  $f = S\rho\psi_1\rho\psi_2\rho = 0$ , with respect to the functions  $\psi_1$  and  $\psi_2$ , is  $S\rho\psi_1'\rho\psi_2'\rho = 0$ ; and this cone is not the same as  $S\rho\phi_1'\rho\phi_2'\rho = 0$ , because  $a'\phi_1' + b'\phi_2' + c'$  and  $(a\phi_1 + b\phi_2 + c)^{-1}$  are not commutative in order of operation.

17. *Condition that two functions should be expressible in the form  $\Phi_3^{-1}\Phi_1$  and  $\Phi_3^{-1}\Phi_2$ .*—Though an arbitrary cubic cone may be written in the form  $S\Phi_1\rho\Phi_2\rho\Phi_3\rho = 0$ , in which the  $\Phi$  are self-conjugate functions, it is not generally possible to express two functions by the relations  $\phi_1 = \Phi_3^{-1}\Phi_1$  and  $\phi_2 = \Phi_3^{-1}\Phi_2$ . If  $\rho_1, \rho_2$ , and  $\rho_3$  are the axes of  $\phi_1$ , and  $g_1, g_2$ , and  $g_3$  its roots, then, if  $\phi_1 = \Phi_3^{-1}\Phi_1$ ,

$$\Phi_1\rho_1 = g_1\Phi_3\rho_1 = x_1g_1V\rho_2\rho_3,$$

$$\Phi_1\rho_2 = g_2\Phi_3\rho_2 = x_2g_2V\rho_2\rho_1,$$

and

$$\Phi_1\rho_3 = g_3\Phi_3\rho_3 = x_3g_3V\rho_1\rho_2.$$

To prove these relations, observe that

$$g_1 S \rho_2 \Phi_2 \rho_3 = S \rho_2 \Phi_1 \rho_3 = S \rho_3 \Phi_1 \rho_2 = g_2 S \rho_2 \Phi_2 \rho_3 ;$$

and therefore, as  $\Phi_1$  and  $\Phi_2$  are self-conjugate,

$$S \rho_2 \Phi_2 \rho_3 = S \rho_3 \Phi_2 \rho_1 = S \rho_1 \Phi_2 \rho_3 = 0,$$

and

$$S \rho_2 \Phi_1 \rho_3 = S \rho_3 \Phi_1 \rho_1 = S \rho_1 \Phi_1 \rho_2 = 0,$$

provided the roots  $g_1$ ,  $g_2$ , and  $g_3$  are unequal.

It appears, therefore, that the axes of  $\phi_1$  are a self-conjugate triad of lines with respect to the two cones  $S \rho \Phi_1 \rho = 0$  and  $S \rho \Phi_2 \rho = 0$ .

If, in addition,  $\phi_2 = \Phi_2^{-1} \Phi_1$ , the axes of  $\phi_2$  would also be a self-conjugate triad with respect to  $S \rho \Phi_2 \rho = 0$ ; but if two triads of lines are self-conjugate to the same quadric cone, both triads must lie on a quadric cone.<sup>1</sup> The condition is, therefore, the axes of  $\phi_1$  and  $\phi_2$  must lie on a quadric cone.

Returning to the functions  $\Phi_1$  and  $\Phi_2$ , since

$$V \rho_1 \Phi_1 \rho_1 = g_1 V \rho_1 \Phi_2 \rho_1 = x_1 g_1 V \rho_1 V \rho_2 \rho_3 \parallel (\phi_1 - g_1) \epsilon_1,$$

the axes of  $\phi_1$  lie on the quadric cone  $S V \rho \Phi_1 \rho V \epsilon_1 \phi_1 \epsilon_1 = 0$ . This cone contains also the axes of  $\Phi_1$ , and, by a little manipulation, its equation may be thrown into the form  $S V \rho \phi_1 \rho V \epsilon_1 \Phi_1 \epsilon_1 = 0$ . In like manner, the axes of  $\Phi_2$  lie on the cone

$$S V \rho \phi_1 \rho V \epsilon_1 \Phi_2 \epsilon_1 = 0.$$

18. *Triads of lines in perspective with their derived triads.*—Generally the locus of lines  $\rho$ , any one of which is coplanar with its derived line  $\phi_1 \rho$  and a fixed vector  $\alpha$ , is the quadric cone  $S \rho \phi_1 \rho \alpha = 0$ . If this cone contains a triad of mutually rectangular lines  $i$ ,  $j$ , and  $k$ ,

$$S \alpha \sum V i \phi_1 i = 0, \quad \text{or} \quad S \alpha \epsilon_1 = 0.$$

<sup>1</sup> If the triangle, the coordinates of whose vertices are  $x_1, y_1, z_1$ ;  $x_2, y_2, z_2$ ; and  $x_3, y_3, z_3$ , is self-conjugate with respect to

$$ax^2 + by^2 + cz^2 = 0; \quad ax_2x_3 + by_2y_3 + cz_2z_3 = 0, \quad \&c.,$$

and therefore

$$\begin{vmatrix} \frac{1}{x_1} & \frac{1}{y_1} & \frac{1}{z_1} \\ \frac{1}{x_2} & \frac{1}{y_2} & \frac{1}{z_2} \\ \frac{1}{x_3} & \frac{1}{y_3} & \frac{1}{z_3} \end{vmatrix} = 0.$$

If three lines are in perspective with their derived lines, and if  $\alpha$  is the axis of perspective, the lines lie on the cone  $S\rho\phi_1\rho\alpha = 0$ . This furnishes an interpretation of the vanishing of the skew scalar invariant  $N'_3 - N_3$ , in Art. 19 of the Paper on Scalar Invariants. In the notation of that article, if  $\rho_1$ ,  $\rho_2$ , and  $\rho_3$  are the axes of  $\phi$ , and if

$$\theta\rho_1 = a_{11}\rho_1 + a_{12}\rho_2 + a_{13}\rho_3, \text{ \&c.}, \quad V\rho_1\theta\rho_1 = a_{12}V\rho_1\rho_2 + a_{13}V\rho_1\rho_3,$$

and

$$SV\rho_1\theta\rho_1 V\rho_2\theta\rho_2 V\rho_3\theta\rho_3 = (a_{12}a_{23}a_{31} - a_{21}a_{32}a_{13}) SV\rho_2\rho_3 V\rho_3\rho_1 V\rho_1\rho_2.$$

The skew invariant consequently vanishes, if the derived lines of the axes of either vector function with respect to the other function are in perspective with them.

Finally, it may be noticed, that if  $\beta$  is an arbitrary vector, the locus of axes of the functions  $\phi_1\rho + \alpha S\beta\rho$  is the quadric cone  $S\rho\phi_1\rho\alpha = 0$ .

19.—*Co-residual property*.—The axis of the functions  $\phi_1 + t\phi_2$  are all co-residual triads of lines on the cubic cone. For the four lines common to the cone

$$SaV\rho(\phi_1 + t\phi_2)\rho = 0$$

(which contains the axes of  $\phi_1 + t\phi_2$ ), and to the cone  $SaV\rho\phi_1\rho = 0$ , satisfy the equation

$$\begin{aligned} x\alpha &= V.V\rho\phi_1\rho V\rho(\phi_1 + t\phi_2)\rho \\ &= -t\rho S\rho\phi_1\rho\phi_2\rho. \end{aligned}$$

Three of the lines are therefore on the cone  $S\rho\phi_1\rho\phi_2\rho = 0$ , and are variable with  $\alpha$ , but independent of  $t$ . The fourth line is, of course,  $\alpha$ . The three lines common to the cubic, and  $Sa\rho\phi_1\rho = 0$  are therefore residual to every triad of axes.

If the elliptic parameters of the axes of  $\phi_1 + t\phi_2$  are  $u_1$ ,  $u_2$ , and  $u_3$ , their sum is constant, or

$$u_1 + u_2 + u_3 = u_0.$$

Unless, therefore,  $u_0$  is equal to half a *period*, the axes of two functions  $\phi_1 + t\phi_2$  and  $\phi_1 + t'\phi_2$  will not lie on a quadric cone.

Again, the four lines common to the quadric cones satisfy

$$\begin{aligned} x\rho &= V.Va\phi_1\rho Va\phi_2\rho \\ &= -\alpha Sa\phi_1\rho\phi_2\rho. \end{aligned}$$

Consequently, the three edges which lie on the cubic lie also on the new quadric

$$Sa\phi_1\rho\phi_2\rho = 0.$$

But the equation of this cone may be written in either of the forms

$$S\phi_1^{-1}\alpha V\rho\phi_1^{-1}\phi_2\rho = 0, \quad \text{or} \quad S\phi_2^{-1}\alpha V\rho\phi_2^{-1}\phi_1\rho = 0;$$

and therefore the axes of  $\phi_1^{-1}\phi_2$  (or of its reciprocal  $\phi_2^{-1}\phi_1$ ) also lie on it, and are the three residual lines in which it cuts the cubic.

More generally, the equations of the quadric cones combine into

$$S\alpha V\rho (a\phi_1 + b\phi_2 + c)\rho = 0, \quad \text{and} \quad S\alpha V\rho (a'\phi_1 + b'\phi_2 + c')\rho = 0;$$

and, as before, their three lines of common intersection with the cubic lie on the cone

$$S\alpha (a\phi_1 + b\phi_2 + c)\rho (a'\phi_1 + b'\phi_2 + c')\rho = 0.$$

This equation, being thrown into the form

$$S(a\phi_1 + b\phi_2 + c)^{-1}\alpha V\rho (a\phi_1 + b\phi_2 + c)^{-1}(a'\phi_1 + b'\phi_2 + c')\rho = 0,$$

shows that the axes of all the functions of the type

$$(a\phi_1 + b\phi_2 + c)^{-1}(a'\phi_1 + b'\phi_2 + c')$$

are co-residual triads on the cubic cone.

## II.

## PREHISTORIC CENOTAPHS. BY GEORGE COFFEY, B.E.

[Read NOVEMBER 11, 1895.]

SHOULD grave-mounds in which no remains of interment have been found be regarded as cenotaphs, is a subject that has been much discussed. Canon Greenwell rejected the existence of such monuments in his work on British Barrows. He writes :—

“Barrows are sometimes met with in which, upon examination, no burial appears to have taken place, since no remains of the body are to be discovered. In the greater number of these instances there can be little doubt that, in consequence of the imperfect exploration of the mound, the place of burial has been missed, and in other cases that a small deposit of burnt bones or the almost entirely decayed bones of an unburnt body have been overlooked. . . . But there are other cases, and such have occurred to myself, when the most careful examination has failed to discover any trace of an interment. These empty barrows have been spoken of as cenotaphs, monuments raised to commemorate but not to contain the dead. Mr. Kemble, holding the view that barrows were prepared beforehand, and that, from time to time, bodies were inserted in the mounds so set apart, believed that the barrows where no burials are found had never been used for interment. Neither of these views appears to be a tenable one, and both seem modes of accounting for the absence of burials much too artificial for such a state of society as may be supposed to have existed during the ages when barrow burial was in use in Britain. With every wish to defer to the great practical knowledge of Mr. Kemble, as well as to the skill with which, as a rule, his mind moulded the facts he had accumulated into a consistent and reasonable theory, I cannot but regard this opinion as being both unnatural and out of harmony with the general mass of evidence which the burial mounds afford. Nor do I see any difficulty in accounting for the absence of bones or other indications of an interment where a careful examination has shown that such evidence has not been overlooked through a careless or imperfect exploration. In the greater number

of instances, however, as has already been stated, the barrows are found empty, not because they are so in reality, but because they have not been searched exhaustively. The absence of any signs of a burial, where a barrow has been minutely and fully examined, is due, in my opinion, to the entire decay of the skeleton, in cases where no weapon, implement, ornament, or vase has accompanied the body."<sup>1</sup>

Again, under Barrow XLVII., Canon Greenwell writes:—

"It was the most perplexing barrow I have ever met with; and but for my complete disbelief that monuments of a more artificial age, such as cenotaphs, had any existence during the era of these burial mounds, I should feel that it offers a problem very difficult to solve on any other supposition."<sup>2</sup>

More recent researches in the barrows of the North of England (*Archæologia*, 1890) have induced Canon Greenwell to modify his position. He now reluctantly admits the possibility of cenotaphs. This change of opinion is based on the result of the exploration of the barrow called "Willie Howe," in the East Riding of Yorkshire. Concerning this barrow he writes—

"Throughout the whole course of my barrow explorations I have never met with anything that I can compare with this mound. It was of more than ordinary size, and constructed at the expense of much labour, well proportioned and symmetrically made, and in every way appeared to have been intended for a place of sepulture. Beneath it at the centre was a deep excavation in the solid chalk rock, in which were found remains of animal bones almost as sound as when they were deposited, a condition which would have equally been incidental to human bones. No disturbance had ever taken place within the grave to account for the disappearance of the body or its accompanying relics, and it is almost impossible to believe that an interment had ever been made in it. I can attempt no explanation of the very peculiar features here manifested, except one which I have arrived at with great reluctance. Until I opened Willie Howe I had always disbelieved in the erection of such memorials as cenotaphs at the time when these barrows were constructed. That supposition appears, however, to be countenanced by the experience of this mound, and I am forced to admit the possibility that this very large mass of chalk stones was thrown up merely to commemorate, and not to contain, the body of some great personage. There is still a difficulty which this

<sup>1</sup> British Barrows, page 27. <sup>2</sup> *l. c.*, page 202. See also Barrows XCI. and CXXIX.

explanation does not remove. If it is admitted that a mound like this might be raised merely as a memorial, that does not explain why beneath it a deep excavation should have been made. On more than one previous occasion I have found mounds apparently sepulchral, which proved to be entirely wanting in any signs of an interment. I came to the conclusion in these cases, though it was sometimes difficult to admit it, that the bones had gone entirely to decay, leaving no trace behind them. It is possible, however, that in these mounds, as in the case of Willie Howe, there had never been any burial within them; and that they, equally with this in question, were memorial and not sepulchral."<sup>1</sup>

Canon Greenwell's position may be described as the admission of a negative possibility. Speaking generally, the present state of the question appears to be that cenotaphs are not yet accepted in prehistoric archæology, though individual archæologists support that explanation of barrows in which interments have not been made.<sup>2</sup>

The hesitation of archæologists to recognize such barrows as cenotaphs appears to be due to a misconception of the essential idea of the cenotaph.

This is evident in the extracts quoted from Canon Greenwell, who speaks of such monuments as memorials, whereas they are, in primitive logic, true tombs. This point appears to be recognized by Dr. Naue in the passage quoted in the note below.

The error prevails owing to the fact that, as far as I am aware, no attempt has hitherto been made to combine the archæological with the anthropological evidence on the subject. When we do so, it becomes evident that it would be more difficult to account for the absence of cenotaphs from the remains of a barrow-raising people than their presence.

Before, however, proceeding with this portion of the subject, it is desirable to further develop the archæological evidence on the question.

<sup>1</sup> "Recent researches in the Barrows in Yorkshire, Wiltshire, Berkshire, &c." *Archæologia* (1890), vol. 52, p. 24.

<sup>2</sup> For instance, Handelsmann, "*Les Tumulus et les Cénotaphes de l'Âge du Bronze dans l'Île de Sylt*," "*Cong. Préhist.*" Stockholm, vol. i., p. 516; Naue, "*Quelques tumulus, la plupart très bien construits, n'ont donné aucun objet—tout au plus, et très rarement, quelques traces de charbons. Je les considère comme des cénotaphes, tombes de hauts personnages de la tribu décédés au loin et dont on n'avait pu recouvrer les corps.*" "*L'Époque de Hallstatt en Bavière*," *Revue Archéologique*, 3 S., vol. xxvii. (1895), p. 46.

One of the most conclusive examples of a prehistoric cenotaph, probably the most conclusive, occurs in Ireland. It is the principal cairn in the prehistoric cemetery on the Loughcrew Hills, Co. Meath. The remains of twenty-eight cairns can still be counted in this important cemetery. The larger cairns are chambered, and in most cases have well-defined passages leading to the chambers. They are surrounded at the base by a curb of large stones laid end to end, within which the cairn is heaped, and the construction is in all such cases well and clearly defined. In the two largest of the chambered cairns, "L" and "T," the boundary stones are sharply curved in at the entrances, so that the entrances are clearly marked on the circle of the boundary stones.<sup>1</sup> This feature may be also seen in the great tumulus of New Grange, but it is more strongly marked at Loughcrew. Cairn "L" is 135 feet in diameter, and the entire length of passage and chamber measures 29 feet: Cairn "T," 115 feet in diameter, and passage and chamber, 28 feet.

These, as stated, are the largest chambered cairns, but they are exceeded by the dimensions of the unchambered Cairn "D," the largest in the cemetery, which reaches 180 feet in diameter.

This cairn is surrounded by a precisely similar curb of great stones, which likewise is curved-in apparently to mark an entrance to the cairn.

It is important to note the bearings of the passages to the chambered cairns in the cemetery.

In ten cases with well marked passages, they are given by Conwell as follows:—

Cairn F.	E. 10, N.
„ H.	E. 10, S.
„ I.	E.
„ J.	E. 10, S.
„ K.	E. 15, N.
„ L.	E. 20, S.
„ S.	W. 10, N.
„ T.	E. 10, S.
„ U.	E. 20, S.
„ V.	E. 20, S.

Thus, with the exception of S., the passage of which faces west,

<sup>1</sup> The references are to Conwell's "Discovery of the Tomb of Ollamh Fodhla," Dublin, M'Glashan & Gill, 1873; a somewhat romantic essay, but reliable for descriptive details. I have checked the descriptions and measurements on the ground.



the bearings of the passages of these cairns lie between E. 15, N. and E. 20, S. In the cases of "L" and "T," where in addition to the passages the entrance is marked by the curving-in of the boundary stones, the bearings are E. 20, S. and E. 10, S.

Returning now to Cairn "D," I quote Conwell's description of the cairn and account of its excavation in the years 1865-68:—

"This has been the largest of all the cairns in the range, the diameter of the base being 60 yards. The north and east sides have been left untouched; but on the south and west for nearly 100 yards round the base, and extending inwards to a distance of 24 yards from the circumference towards the centre, the dry loose stones comprising the cairn have been entirely removed. The height of what remained of the cairn, before commencing any of the operations upon it, measured 28 paces in sloping ascent from the base to the summit. The original circle of fifty-four large flag-stones laid on edge round its base is still perfect, and on the eastern side these marginal stones curve inwards for twelve paces in length towards a point indicated by E. 20, S., denoting where the entrance or passage to the interior chambers is to be found. As the cairn at this point—which, judging from the analogy in the construction of the other cairns, would indicate the direction of the passage or entrance—appeared not to have been previously disturbed, Mr. Naper and Mr. Hamilton had from the first strong hopes of finding the interior chambers and their contents in their original state, such exactly as they had been left in by the builders of this megalithic pile. Accordingly, on Monday morning, 4th September, 1865, about a dozen labouring men commenced to remove the stones, and to make a passage inwards from this point. As they advanced in this way into the cairn, the loose stones composing it occasionally fell in dangerous masses, filling up excavations already made; so that it was at length determined to make a cutting right through the cairn, running east and west, and commencing from the top. After two weeks spent in this labour, and with as many men as could be conveniently engaged at it, we did not come upon any of the interior chambers; nor have our labours been more successful on the 3rd, 4th, 5th, 6th, 8th, 9th, and 10th June, 1868, when, by Mr. Naper's directions twenty men were busily engaged every day in continuing the transverse cutting through the cairn, in search of the interior chambers. This, however, is now the only one of all the cairns left unexamined; and as the surface level of the ground has been already reached for the greater part of the way across the cairn, very little additional labour would be required to settle the question whether or

not this is a 'Blind tope.' As the cutting proceeded, about midway down among the loose stones, were found portions of the skulls, teeth, and other bones of graminivorous animals, probably the ox and deer."<sup>1</sup>

We have here a most interesting group of facts. It may be set down as certain that no chambers were contained in the portion of the cairn that had been removed on the south and west sides prior to Conwell's excavations. The stones removed from that part of the cairn were probably used to build the neighbouring fence walls. The large stones round the base have been left untouched, and within the cleared space there are no signs whatever of large stones such as would have formed the chamber. Had such existed, they would not have been broken up, as the loose stones of the cairn presented plenty of suitable material ready to hand.

Not only are the large stones at the base still there, but the curve has not been disturbed, the circle of the base is still clearly and regularly marked by them. There is no indication on this curve of an entrance at the cleared side. On the other hand, an entrance is clearly marked on the boundary stones at the east side at a point E. 20, S., which corresponds with the points of entrance to the majority of the chambered cairns. Following up this apparent entrance, not only was no trace of an interment found, but no indication of passage or chamber stones. In the other large cairns the passages and chambers are formed of large stones, and no attempt at concealment is made.

It is improbable that any interments exist in the unexplored portion of the cairn, and, if any were found, it would be necessary to look on them as secondary interments; they could in no case be regarded as the primary object for which the cairn was erected.

We have, then, the case of a cairn which to all outward appearance is a chambered cairn, with the entrance properly marked on it at the expected point, precisely similar to cairns "L" and "T," but which proves, on investigation, to be devoid of passage and chamber, to be in fact a blind tomb. In this respect it is, I think, even more conclusive than Willie Howe, as in its outward construction it would appear that a sepulchral purpose is intentionally simulated.

We may now consider the anthropological evidence. The idea of the cenotaph, we shall find, so far from being artificial, in the sense of modern or advanced civilization, is essentially primitive. It is, in fact, intimately related to the primitive theory of the soul.

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<sup>1</sup> "Ollamh Fodhla," Cairn "D."

In a most interesting Paper on "Certain Burial Customs as illustrative of the Primitive Theory of the Soul," Mr. J. G. Frazer has brought together a host of facts on this subject, from which I summarize the following particulars, referring the reader to the original Paper for authorities<sup>1</sup> :—

The belief is general that the ghosts of the unburied dead haunt the earth. But burial by itself was not sufficient to guard against the return of the ghost. Many precautions were taken by primitive man for the purpose of excluding or barring the dead from the living. Mr. Frazer recounts many customs for the purpose of chasing away the ghost from his late home or barring his return thereto. Some plans of keeping a ghost down are: to nail the dead man to the coffin (the *Chuwashé*), to tie the feet together (among the Arabs), or hands together (in Voigtland), or neck to legs (among the Troglodytes, Damaras, and New Zealanders). The Wallachians drive a long nail through the skull, and lay a thorny stem of a wild rosebush on the shroud. The Californians and Damaras break the spine.<sup>2</sup> The ghost of a suicide has always been looked on as especially dangerous, hence the custom of driving a stake through the body, and other customs of similar import.<sup>3</sup>

"But," as Mr. Frazer asks, "what happened when the body could not be found, as when the man died at sea or abroad? Here the all-important question was, What could be done to lay the wandering ghost? For wander he would till his body was safe under the sod, and by supposition his body was not to be found. The case was a difficult one, but early man was equal to it. He buried the missing man in effigy, and, according to all the laws of primitive logic, an effigy is every bit as good as its original."<sup>4</sup>

<sup>1</sup> Journal Anthropological Institute, Great Britain and Ireland, vol. xv., p. 64.

<sup>2</sup> Miss Florence Peacocke, who has collected burial customs in Lincolnshire, states that skulls are at times dug up with iron nails hammered through them; about 1843 a skull was dug up in Messingham Churchyard with a nail through it, and on the authority of "*Bygone Lincolnshire*" (Ed. by Wm. Andrews)—"That the 'Layer-out' in some places ties together the feet of the corpse, but it is necessary that they should be unloosed before the coffin is screwed down, or else the dead will not rise at the first resurrection."—"The Antiquary," November, 1895.

<sup>3</sup> The general subject of the relations of the ghost to the body may be pursued in Tylor's "*Primitive Culture*," Frazer's "*Golden Bough*," W. Crooke's "*Introduction to the Popular Religions and Folk-lore of Northern India*," and the publications of the Bureau of Ethnology of the Smithsonian Institution.

<sup>4</sup> Frazer, *l. c.*, p. 95.

A few illustrations which I extract, with references, from a lengthy note to this statement, will make it clearer.

In ancient Mexico, when a trader died in a far country, the relations at home made a puppet of candlewood, adorned it with the usual paper ornaments, mourned over, burnt it, and buried the ashes in the usual way. Similarly soldiers who fell in battle were buried in effigy (Bancroft, *Native Races*, ii., pp. 616, *seq.*). In Samoa the relations spread out a sheet on the beach near where the man had been drowned, or on the battle-field where he had fallen; they then prayed, and the first thing that lighted on the sheet (grasshopper, butterfly, or whatever it might be) was supposed to contain the soul of the deceased, and was buried with all due ceremony (Turner, *Samoa*, pp. 150, *seq.*). The Garuda-purāṇa directs that "if a man dies in a remote place, or is killed by robbers in a forest, and his body is not found, his son should make an effigy of the deceased with Kusa grass, and then burn it on a funeral pile" with the usual ceremonies (Monier Williams, *Religious Thought and Life in India*, p. 300).<sup>1</sup> In China, during the reign of the Emperor Chàn-tuk, in the first century of the Christian era, it was enacted that if the bodies of soldiers who fall in battle, or those of sailors who fall in naval engagements, cannot be recovered, the spirits of such men shall be called back by prayers and incantations, and that figures shall be made either of paper or of wood for their reception, and be burned with all the ordinary rites. . . . The custom is now universally observed" (Gray, *China*, i., pp. 295, *seq.*).

In Madagascar, cenotaphs are erected for those whose bodies cannot be found, and their ghosts are supposed to be allured thither (Ellis, *History of Madagascar*, i., p. 255).

Writers, who describe the burial customs of primitive peoples, rarely mention the case where the body is missing. I have looked through Herbert Spencer's *Descriptive Sociology*, and the only instances given there are those from Mexico and Madagascar quoted above.

The publications of the Bureau of Ethnology of the Smithsonian Institution, which describe so fully the customs of the native races of America, are silent on this point. Mr. Frazer appears, in fact, to be the only writer who has directed special attention to this branch of burial customs. Yet the case of a missing body must have been provided for wherever importance was attached to burial. At the

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<sup>1</sup> See also W. Crooke's "Popular Religion and Folk-lore of Northern India," p. 231.

present day funeral customs in use in many parts of Europe point, in survivals, to the widespread recognition by primitive man of the importance of providing for such cases. Mr. Frazer cites, amongst others, the following instances:—In modern Greece, when a man dies abroad, a puppet is made in his likeness, and dressed in his clothes, and mourning is made over it; it is not stated that the puppet is buried. In Albania, when a man dies abroad, all the usual lamentations are made at home, as if the body were present; the funeral procession goes to the church, but, in the place of the bier, a boy walks, carrying a dish on which a cracknel is placed over some boiled wheat. This dish is set in the middle of the church, and the funeral service is held over it; it is not, however, buried, but the women go and weep at the grave of the relation who died last.<sup>1</sup>

Dr. C. R. Browne, M.R.I.A., informs me that in the islands of Aran and in Innisboffin the usual wake is held in the case of a drowned person whose body has not been recovered. Wakes are likewise held on receipt of the news of a death abroad.

Information as to the manner in which primitive peoples provide for the case of a missing body is scanty, apparently because it has not been looked for, but the examples given are sufficient for our purpose.

They enable us to understand the essential meaning of the cenotaph to the Greeks and the Romans, which has been obscured by the modern association of the idea of memorial, and render available the large body of evidence which may be gathered from classical writers.<sup>2</sup>

The primitive theory of the relation of the soul, or ghost, to the body is at the bottom of the burial customs of the Greeks and the Romans. The same range of ideas, which we find in primitive man, are clearly present.

The importance attached by the Greeks and the Romans to burial need not be insisted on. The ghost of the unburied might not enter Hades, but must perforce wander till burial was given to the body.

Thus, in the *Iliad*, Patroclus reproaches Achilles for neglecting to give him burial:—"Bury me with all speed, that I pass the gates of Hades. Far off the spirits banish me, the phantoms of men outworn, nor suffer me to mingle with them beyond the river, but vainly I wander along the wide-gated dwelling of Hades" (xxiii., 71). The description of the unburied dead, and the appeal of Palinurus to *Æneas* in the *Æneid*, may be also instanced (vi., 295-415).

<sup>1</sup> Frazer, *l. c.*, p. 96.

<sup>2</sup> Cenotaphs are treated as memorial in Smith's and in Seyffert's (ed. by Nettleship and Sandys) Dictionaries of Classical Antiquities.

The notion that the ghost was a double of the body, and that injury to or mutilation of the body took effect likewise on the ghost, is apparent in the description given in the *Æneid* of Deiphobus in Hades, "with all his body mutilated" (vi. 494).

It may be compared with the belief recorded of the Indians of Brazil, "that the dead arrive in the other world wounded or hacked to pieces, in fact, just as they left this."<sup>1</sup>

From, no doubt, a similar belief, in this case to render the ghost harmless, Greek murderers used to hack off the extremities of their victims.<sup>2</sup> This latter instance is compared by Mr. Frazer with the practice among the Australians of cutting off the thumb of a slain enemy, so that the ghost might not be able to throw the spear.<sup>3</sup> The same idea may be traced in the practice at Athens of cutting off the right hand of suicides.<sup>4</sup>

It has not been possible within the limits of the present Paper to do more than indicate, by a few striking examples, the general notion underlying the Greek and Roman theory of the ghost.

These examples show, however, that in Greek and Roman burial customs we are brought face to face with the same primitive conceptions concerning the relations of the ghost to the body which are found widely distributed among primitive peoples, and which, indeed, still survive among advanced peoples to an extent not generally suspected.

This wider aspect of the subject has been touched on, in order that the reader may more fully realize the force of the direct evidence of the cenotaphs which we shall now discuss.

The erection of cenotaphs is frequently mentioned by the Greek writers. Throughout Greece, when the relatives had not the body of the deceased, they erected cenotaphs, which were entitled to the same respect as true tombs.<sup>5</sup>

That the idea of such monuments is burial, and not memorial, may be gathered from the following illustrations:—

When Athene urges Telemachus to seek for his father, she adds: "But if thou shalt hear that he is dead and gone, return then to

<sup>1</sup> Tylor, "Primitive Culture," i., 451.

<sup>2</sup> Aeschylus, "Choephoroi," 439: Sophocles, "Electra," 445—see the scholia on this verse, Jebb's "Electra," Appendix.

<sup>3</sup> Tylor, "Primitive Culture," i., 451.

<sup>4</sup> Daremberg and Saglio's "Dictionnaire des Antiquités Grecques et Romaines," "Funus," p. 1370.

<sup>5</sup> *Ibid.*, p. 1370.

thine own dear country and pile his mound, and over it pay burial rites, full many as is due."—

σῆμά τέ οἱ χεῦται καὶ ἐπὶ κτέρεα κτερεῖζαι  
πολλὰ μάλ', ὅσσα ἔοικε. . . . (Od. i. 291.)

Xenophon describes the burial of the dead after the battle of Calpe: "As the victims were favourable, the Arcadians also accompanied him, and buried the greatest part of the dead where they had severally fallen; for they had now lain five days, and it was no longer possible to bring them away; some of them, however, they gathered together out of the roads, and buried as becomingly as they could with the means at their command; while for those they could not find they erected a large cenotaph [with a great funeral pile], and put garlands upon it": οὓς δὲ μὴ εὗρισκον κενοτάφιον αὐτοῖς ἐποίησαν μέγα [καὶ πυρὰν μεγάλην] καὶ στεφάνους ἐπέθεσαν (vi. 4. 9).<sup>1</sup>

In the description in Thucydides of the funeral ceremonies of the Athenians who fell in the first year of the Peloponnesian war there is no mention of cenotaphs, but the underlying idea of the performance of the burial rites of the missing is clearly indicated.

"When the actual procession takes place, waggons carry coffins of cypress-wood, one for each tribe. In them are the bones of the tribe to which each individual belongs. One bier is borne empty, fully furnished forth, for the missing who had not been discovered at the taking up of the dead."—μία δὲ κλίνη κενὴ φέρεται ἑστρωμένη τῶν ἀφανῶν, οἱ ἂν μὴ εὕρεθῶσιν εἰς ἀναίρεσιν. (ii. 34.)

M. Edward Cuq, in the article "Fusus" in Daremberg and Saglio's *Dictionnaire des Antiquités*, has collected the sense of a number of passages on cenotaphs from Roman writers. His statement so fully covers the ground, it will be sufficient to quote the passage, referring the reader, for authorities, to the notes there given:

"Si le corps n'a pu être retrouvé, la sépulture n'est que 'imaginaire,' et le tombeau porte le nom de cénotaphe (*cenotaphium*). La construction des cénotaphes était due à cette croyance que l'âme détachée du corps avait besoin d'une demeure. Si on ne lui donnait un tombeau pour asile, elle errait sans trêve ni repos, comme un génie

<sup>1</sup> The words καὶ πυρὰν μεγάλην are omitted in three good mss.; they are retained in two good mss., and in all the inferior ones. They are retained by Dindorf, but rejected by Zeune and others. Zeune remarks that he never heard of a funeral pile being erected in conjunction with a cenotaph. When the sepulchral nature of the cenotaph is understood, it is seen that the intrinsic evidence of the passage supports their retention.

malfaisant. Aussi, dès que le cénotaphe était terminé, appelait-on par trois fois l'âme du défunt pour l'inviter à entrer dans la demeure qui lui était préparée.

"Les cénotaphes étaient affectés principalement à ceux qui avaient péri en mer ou en temps de guerre. Un monument de ce genre fut construit par Germanicus, pour les âmes des soldats des légions de Varus. Le cénotaphe était donc un *inane bustum*, un *vacuum sepulcrum* et la sépulture était *inanis*.

"Il y avait une autre espèce de cénotaphe érigé en mémoire d'un défunt inhumé ailleurs : c'était un *honorarium sepulcrum*. Tel fut le monument construit pour Drusus, sur les bords du Rhin, par les soldats placés sous ses ordres, tandis que son corps, transporté à Rome, était inhumé au Champ de Mars. Le christianisme a conservé l'usage de ces cénotaphes, qui furent érigés en l'honneur des saints.

"De ces deux sortes de cénotaphes, la première a le caractère d'un *locus religiosus*, mais non la seconde. Telle est la décision d'un rescrit de Marc-Aurèle et Verus, rapporté par Ulpien."<sup>1</sup>

The sepulchral character of the cenotaph, and its relation to the primitive theory of the ghost, has now been sufficiently established.<sup>2</sup> In the grave-goods, weapons, "food-vessels," &c., accompanying prehistoric interments, we have evidence of the existence of the same fundamental conception of the ghost as a double of the body, which underlies the theory of the cenotaph, and it seems the natural conclusion that the empty barrows are cenotaphs. But fortunately I am able to relate the evidence collected in this Paper directly to Ireland, and thus close, at least for Ireland, the chain of evidence on the subject.

<sup>1</sup> "Funus," p. 1396.

<sup>2</sup> We should perhaps recognise the possibility of some cenotaphs being what may be described as fictitious cenotaphs. That is to say, where the deceased has been buried abroad, a monument might be erected in his own country, not as a memorial, but to give his shade a dwelling amongst his own people. The case mentioned by Bancroft of a trader dying abroad perhaps is of this class. The cenotaph (*tumulum inanem*) erected by Andromache in Epirus for Hector (buried elsewhere), at which she made yearly offerings and "called on Hector's spirit" ("Æneid," III. 300), is also in point. It is conceivable that a people migrating from one country to another might erect tombs to their hero ancestors in the new country, so that their shades might dwell among them in their new home. There is no evidence that this was done, but the idea seems to be within the range of primitive logic. Cenotaphs such as Cairn D, the most important cairn in the cemetery at Loughcrew, appear to require some such explanation. In any case the suggestion is worth throwing out as indicating a direction in which evidence may be looked for.



The *Agallamh na Senórach*, or Colloquy with the Ancients, translated by Mr. Standish H. O'Grady, from the *Book of Lismore*, a ms. of the 15th century, is a topographical tract somewhat after the manner of the Dindsenchus, but cast in narrative form. It is, like the Dindsenchus, an invaluable store of ancient lore concerning glens, hills, lochs, raths, and burial mounds. In some instances the opening of grave-mounds and taking therefrom of weapons and gold is recounted.

The following story, which I extract in full (page 236), is of especial interest, as direct evidence of a tradition of the erection of cenotaphs in the heroic age in Ireland :—

“ ‘Caeilte,’ said the King of Munster, ‘what are these two great graves that we see?’ ‘The three *óglae* that, as above, took service with Finn at *ráithín na n-ingnadh* and had the wonderful hound; it was they that slew the two warriors whose graves those are: Donn and Dubhan, the King of Ulidia’s two sons out of the North.’ ‘How perished they?’ asked the king. ‘The three lay in a place apart from the Fianna,’ Caeilte replied, ‘with their hound centrally between them; and when once night came, there used a wall of fire to surround them so that none might dare even to look at them. On the night in question, the King of Ulidia’s sons kept watch for Ireland’s and Scotland’s Fianna, and thrice made the circuit of the camp. The third time, however, they saw the fiery wall, and Donn said : ‘Tis a strange thing how these three *óglae* are for now a year past, and their hound amongst them; for they have proclaimed that after nightfall none must go look at them!’ Then the King of Ulidia’s sons passed inside through the fire-wall; when they were there they got their arms ready to their hands, and so scanned both men and dog. But the huge hound which daily they had in the chase was at this instant no greater than a lap-dog such as a great lady or man of high estate may keep; one man moreover with his keen sword naked in his hand standing sentry over the animal, while to the mouth of the same another held a *cuach* of fair silver; and the choicest of every kind of liquor which any individual of the three might require of him, that is what the hound kept on ejecting from his mouth into the *cuach*.

“Then to the hound, an *óglae* of them said: ‘It is well, thou noble and righteous and high-couraged! give heed now to the treachery wrought thee by Finn!’ At this the hound wagged his tail hard, whereby was created a factitious magic wind that made their shields to fall from our men’s hands, their swords from their sides, and to be cast before their faces into the fiery wall. Hereat the three killed the King of Ulidia’s two sons; which being effected, the dog

turned, applied his breath to them, and reduced them to dust and ashes, so that nor blood, nor flesh, nor bone was ever found of them. 'Theirs, then, are the two mounds concerning which thou questionest me,' ended Caeilte: 'but, mould and sand excepted, whosoever should open them would not find them to contain the smallest thing.'"

This remarkable passage, in addition to the evidence it furnishes of the erection of cenotaphs in prehistoric times, is of interest as showing that the tradition that some mounds were "blind mounds" was handed down to a late period. At what time the practice of erecting cenotaphs ceased in Ireland we cannot say, or whether or not the people of the early Christian period had contemporary knowledge of such monuments; but the fact that the existence of cenotaphs has been preserved in tradition seems to explain a circumstance in connexion with them noted by several observers.

Mounds, which subsequently proved to be "blind," in several instances showed no signs of previous disturbance.

Dr. Naue speaks of blind mounds explored by him as "*la plupart très bien construits*" (note, p. 18). Canon Greenwell describes Willie Howe as "well proportioned and symmetrically made." No sign of disturbance was noticed at the apparent entrance to Cairn "D" at Lougherew, the interment in which it was therefore thought would be found intact. Can the explanation of a case such as Cairn "D," where we find the other cairns of the cemetery have been systematically rifled, be that the fact that it did not contain anything was well known in the locality, and it was, therefore, passed over by the mound plunderers of early times; or did the knowledge of the treasure-seekers of the practice of erecting cenotaphs enable them to detect such empty mounds without the necessity of an exhaustive search?

## III.

REPORT UPON THE RAISED BEACHES OF THE NORTH-EAST OF IRELAND, WITH SPECIAL REFERENCE TO THEIR FAUNA. BY R. LLOYD PRAEGER, B.E., M.R.I.A. (PLATE I.)

[Read JANUARY 27, 1896.]

THE present Paper is, to a certain extent, supplementary to the Report on the Estuarine Clays of the North-East of Ireland, submitted to the Academy in 1892.<sup>1</sup> It is a matter of regret to me that the termination of my residence in the North of Ireland prevented a more full and detailed survey of the raised beaches of the north-east; but it may be doubted if this would have added much of novelty to our knowledge of the characters and fauna of these deposits, as the more important localities, such as Larne and Portrush, have now been well worked up.

The raised beaches of the north-east have come in for a good deal of attention from geologists, and the literature of the subject is comparatively extensive. Only a few papers, however, contain more than short and general descriptions, and but very few contain definite information relative to the fauna of the beds. It is to these last alone that I shall have occasion to refer. But let it be said, that from the writings in general we gather that at frequent intervals round the north-eastern coast there exist accumulations of gravel and sand, varying in level from high-water mark to about twenty feet above it, and containing throughout marine shells of species, in most cases still living in the vicinity, and, frequently mixed with these, worked flints of distinctly human origin, so that these beds were accumulated, and their elevation effected, during the human period. The raised beaches frequently rest on blue marine clay, characterized by *Scrobicularia piperata*, *Tapes decussatus*, and other littoral shells. Overlying the same clay, in the more open bays and estuaries, we frequently find a deposit of blue marine clay, filled with shells that frequent water of five to ten fathoms in depth. I have elsewhere<sup>2</sup>

<sup>1</sup> Proc. R. I. Academy, 3rd ser., vol. ii.

<sup>2</sup> *Loc. cit.*

expressed my belief that the series of raised beaches referred to is contemporaneous with this upper clay bed, and that the elevation that raised the gravels to their present height, brought up the clays from their place of deposit in some few fathoms of water to their present position at or near high-water mark.

Professor Hull has pointed out<sup>1</sup> that the elevation above present sea-level of the raised beaches of the east coast of Ireland increases as we pass northward, varying from high-water mark at Dublin to twenty feet above it on the Antrim coast; and he identifies this Irish series with the twenty-five-foot raised beach of Scotland. Into this suggestion (which Mr. A. Bell states<sup>2</sup> is not borne out by the fauna) I need not at present inquire, but may remark that my observations bear out, on the whole, Hull's statement as to a general increase of elevation with increasing latitude.

Without further preface I shall proceed to my notes on raised beaches, and they will be taken in geographical order, beginning with the most southern.

#### GREENORE.

The raised beach at Greenore forms an extensive spit of low land, projecting for half a mile into Carlingford Lough, and it has been long known as a locality for rude flint implements. It is composed of horizontally-bedded gravels, rising to about fifteen feet above high-water mark, and containing marine shells from bottom to top. The gravels rest on estuarine clay, with gravelly layers. The fauna of the gravels, as observed on a single visit, is as follows:—

*Anomia ephippium.*

*Ostrea edulis.*

*Pecten maximus.*

*Lucina borealis.*

*Cardium edule.*

*Tapes decussatus.*

*T. aureus.*

*Tellina balthica.*

*Scrobicularia piperata.*

*Mya arenaria.*

*Trochus cinerareus.*

*Littorina obtusata.*

*L. litorea.*

*Turritella terebra.*

*Purpura lapillus.*

The estuarine clay which underlies the gravels and its fauna have been treated of in my report before-mentioned.

<sup>1</sup> "On the Raised Beach of the North-East of Ireland," Brit. Assoc. Report, 1872, and Physical Geol. and Geogr. of Ireland, p. 107.

<sup>2</sup> "Final Report . . . upon the Manure Gravels of Wexford," Brit. Assoc. Report, 1890.

## CARLINGFORD.

Just a mile from Carlingford Castle, on the way to Greenore, beyond a piece of brackish water lying inside the railway, the road makes a slight cutting through a raised beach for a length of about one hundred yards. The only section is on the banks by the roadside. There is to be seen a solid bed of oyster-shells, at between fifteen and twenty feet above high-water mark, and for a few feet above and below this layer are shell-bearing gravels. The deposit rests on Carboniferous limestone. The shells found were—

*Ostrea edulis*. v. c.

*Cardium edule*. r.

*Tapes decussatus*. v. r.

*Patella vulgata*. r.

*Littorina obtusata*. r.

*L. litorea*. c.

## GREENCASTLE.

On the side of Carlingford Lough opposite to that last-mentioned, at the uttermost southern extremity of county Down, an extensive sea-terrace is marked on the Geological Survey map. The only place here which I have had an opportunity of examining is the shore from Cranfield Point north-westwards. At Cranfield Point the great deposit of granite detritus, which stretches round the southern slopes of the Mourne Mountains, forming in many places a thirty or forty-foot cliff facing the sea, gives way to compact blue boulder-clay, with large blocks of polished Carboniferous limestone. A little northward the boulder-clay is capped by a few feet of marine gravels, eight or ten feet above high-water mark, evidently a raised beach. *Saxicava rugosa*, *Patella vulgata*, and *Littorina litorea* were collected, the first in a limestone pebble. Further northward the Carboniferous limestone crops out in low reefs on the shore.

## KILLOUGH.

At the head of Killough Bay a low estuarine flat runs inland for about a mile, at a level slightly above high water. Drain-cuttings here show a foot of sandy clay, then a shelly layer, and under that several feet (base not seen) of very fine, tough, pink and grey laminated clay, without shells. The shell layer is made up of abundance of *Cardium edule*, *Tellina balthica*, *Scrobicularia piperata*, and *Littorina litorea*. Stretching across the lower end of this flat, a fine raised beach faces the sea. The Ardglass railway runs along the top of the raised beach, and cuts through it at Killough Station. At this

spot, it is seen resting on red boulder-clay, its surface being twelve to fourteen feet above high water. Shells of a few species are abundant—

<i>Cardium edule</i> . c.	<i>Trochus umbilicatus</i> . f.
<i>Trochus cinerareus</i> . c.	<i>Ostrea edulis</i> . v. r.
<i>Littorina obtusata</i> . c.	<i>Purpura lapillus</i> . v. r.
<i>L. litorea</i> . c.	<i>Nassa (incrassata?)</i> v. r.

#### SANDEEL BAY.

Round this little bay, which lies east of Groomsport, extends a cliff of fine sand, rising from near high-water mark to a height of fifteen feet. A level field extends backwards from its top. The sand is stratified horizontally, and is full of marine shells, which occur in beds and irregular pockets, some of which almost suggest human agency. *Patella vulgata*, *Littorina obtusata*, *L. litorea*, and the land-shell *Helix acutus* are the prevailing species. I also observed *Pecten pusio*, *Mytilus modiolus*, *Venus gallina*, *Tapes virginicus*, *Solen* sp., *Trochus cinerareus*, *Littorina rudis*.

#### BALLYHOLME BAY.

Before the present sea-wall was built, the raised beach here overhung the strand as a cliff of sand and gravel twenty feet in height, inhabited by quantities of sand-martins. Shells are rare in this bed; but at one spot, in a sandy layer three feet below the surface, and fifteen feet above high water, I obtained *Ostrea edulis*, *Macra subtruncata*, *Trochus cinerareus*, *Littorina obtusata*. The shells were in a very crumbling condition. The gravels, which lie in horizontal beds, rest, at about half-tide level, on a thin layer of blue clayey sand, representing probably the Estuarine clay zone. Below this is the well-known bed of submerged peat, only about six inches thick, but containing the upright stumps of Scotch fir and other trees, in their natural position. Below this is a thin layer of bluish sandy clay, very tough, and full of branches and roots, succeeded by fine red sand or fine red clay. To the westward the boulder-clay rises up from below this series.

#### CARNALEA.

Mr. W. H. Patterson pointed out to me a rather interesting deposit on the shore below Carnalea Station. It consists of a shell bed of small extent, six to twelve inches thick, lying irregularly on

the Ordovician rocks of the shore, about six feet above ordinary high-water mark. It is covered with one foot of reddish clay, evidently washed down from the slopes above. The shells are tightly wedged together, and, though all still living in the neighbourhood, they are of interest as having a much less littoral character than is usual in the beds we are considering—

*Anomia ephippium.* f.

*Ostrea edulis.* c.

*Pecten varius.* r.

*P. opercularis.* f.

*P. pusio.* f.

*P. maximus.* f.

*Venus exoleta.* v. c.

*V. lincta.* r.

*V. fasciata.* f.

*Cardium echinatum.* c.

*Cyprina islandica.* r.

*Lutraria elliptica.* f.

*Solen ensis.* r.

*Patella vulgata.* c.

*Trochus cinerarius.* c.

*T. umbilicatus.* f.

*T. magus.* v. r.

*Littorina obtusata.* c.

*L. litorea.* c.

*Rissoa membranacea.* v. r.

*Hydrobia ulva.* v. r.

*Turritella terebra.* c.

*Cerithium reticulatum.* r.

*Aporrhais pes-pelecani.* f.

*Nassa reticulata.* r.

*Fusus antiquus.* f.

*F. gracilis.* v. r.

*Pleurotoma rufa.* v. r.

*Cypræa europæa.* v. r.

*Serpula vermicularis.* f.

*Balanus* sp. f.

#### KINNEGAR, HOLYWOOD.

The Kinnegar is a sickle-shaped bank of gravel, running for half-a-mile from the slight promontory on the shore below the town of Holywood, in a direction parallel to the coast. The gravels rest on the thick deposit of estuarine clay that fills the upper portion of Belfast Lough, and they have been long noted as yielding flint implements. At the extreme point the bank bends sharply backwards, so as to form a little hook. In the construction of a rifle range in 1887 this hook was cut through, and was found to consist of sand and shells, lying on the estuarine clay, and running in under the gravels, which rested on it in tolerably even, horizontal beds (Pl. I., fig. 1). The following shells were noted :—

*Anomia ephippium.* f.

*Ostrea edulis.* v. c.

*Mytilus edulis.* v. c.

*Cardium edule.* v. c.

*Venus exoleta.* v. r.

*V. gallina.* v. r.

*Tapes virgineus.* f.

*T. pullastra.* r.

*T. decussatus.* f.

*T. aureus.* r.

<i>Tellina balthica</i> . f.	<i>Turritella terebra</i> . c.
<i>Macra subtruncata</i> . v. c.	<i>Cerithium reticulatum</i> . c.
<i>Solen ensis</i> . r.	<i>Nassa reticulata</i> . r.
<i>Patella vulgata</i> . f.	<i>Buccinum undatum</i> . c.
<i>Trochus cinerareus</i> . r.	<i>Fusus antiquus</i> . f.
<i>Littorina obtusata</i> . c.	<i>Murex erinaceus</i> . v. r.
<i>L. litorea</i> . v. c.	<i>Purpura lapillus</i> . f.

The deposit is, however, practically composed of *Ostrea*, *Mytilus*, *Cardium*, *Macra*, and *Littorina litorea*, mixed with sand. Immediately above this bed was a layer of grey sand a foot deep, succeeded by the gravels which form the Kinnegar. The sand was destitute of shells, nor have I found shells in the overlying gravels,<sup>1</sup> though they have unquestionably been thrown up by the sea as a bank between tides, or at low-water mark. And this leads me to repeat that the term 'raised beach' is commonly used to describe not only *beaches*, but also *banks* and *sea-beds*, that have been elevated. The Kinnegar was undoubtedly a bank thrown up by currents, rather than a beach; the Curran at Larne, to be referred to presently, is a very fine example of an inter-tidal or submarine bank which has been elevated. A bank of similar character, still at its original level, and, like the Kinnegar and Curran, forming a sickle-shaped spit, may be seen at low tide at Killowen, near Rostrevor.

#### WEST BANK.

Though it cannot be described as a raised beach, being situated between high and low-water level, reference may be made to a curious deposit of shells occurring at the point of the West Bank, which projects eastwards across Belfast Lough, three miles below Queen's Bridge, and which, till cut through in the formation of the Victoria Channel, formed a barrier round which all vessels approaching Belfast had to steer. The point of the bank, which is composed of over thirty feet of solid estuarine clay, gleams white at low water on a sunny day but it was not until I visited the spot, in 1891, that I learned the cause of its brilliance. At low spring tide, amid miles of dreary mud-flats, the point of the bank rises out as a steep slope of pure shells,

<sup>1</sup> Canon Grainger has recorded, in "Nat. Hist. Review," 1859, Proc., p. 15, the following shells from "ten-feet elevation, Kinnegar, Holywood":—*Anomia aculeata*, *Ostrea edulis*, *Cardium edule*, *Macra subtruncata*, *Littorina litorea*, *Turritella communis*, *Cerithium reticulatum*, *Nassa reticulata*.



six feet in height. *Mytilus edulis*, which lives in thousands on the surrounding flats, constitutes about ninety per cent. of the whole, but the remainder include a number of species which do not now live in the immediate vicinity—

<i>Ostrea edulis</i> . f.	<i>Trochus cinerereus</i> . r.
<i>Anomia ephippium</i> . v. r.	<i>Lacuna divaricata</i> . v. r.
<i>Pecten varius</i> . v. r.	<i>Littorina litorea</i> . v. r.
<i>P. opercularis</i> . v. r.	<i>L. rudis</i> (juv.). r.
<i>Nucula nucleus</i> . v. r.	<i>L. obtusata</i> . f.
<i>Venus gallina</i> . v. r.	<i>Rissoa membranacea</i> . f.
<i>Tapes aureus</i> . f.	<i>R. parva</i> . r.
<i>Cardium edule</i> (juv.). r.	<i>R. albella</i> . v. r.
<i>C. echinatum</i> . v. r.	<i>Hydrobia ulva</i> . r.
<i>C. exiguum</i> . v. r.	<i>Turritella terebra</i> . r.
<i>Lucina borealis</i> . v. r.	<i>Odostomia unidentata</i> . f.
<i>Tellina balthica</i> . v. r.	<i>Corithium reticulatum</i> . c.
<i>Macra subtruncata</i> . v. r.	<i>Natica catena</i> . v. r.
<i>Mya arenaria</i> . v. r.	<i>Nassa incrassata</i> . f.
<i>Corbula gibba</i> . v. r.	<i>Pleurotoma rufa</i> . f.

The rarity of *Cardium edule*, *Tellina balthica*, *Hydrobia ulva*, and *Mya arenaria*, which live in great abundance in the vicinity, as quite as noteworthy as the occurrence of many shells which are not now inhabitants of the neighbourhood. This accumulation may be paralleled with the wonderful shell-banks of Lough Foyle, which have been referred to by Portlock,<sup>1</sup> from which, at the time he wrote, over 59,000 tons of shells, chiefly *T. terebra*, were removed annually, without any failure or diminution in the supply. In that case, as in the present, most of the shells cannot have lived in the vicinity, but must have been brought by tidal currents.

#### KILROOT.

The raised beach at Kilroot was mentioned, and a short list of its shells given, by Hull, in 1872,<sup>2</sup> the species recorded being *Anomia ephippium*, *Cardium edule*, *Patella vulgata*, *Trochus umbilicatus*, *Littorina littoralis*, *L. litorea*, *Corithium reticulatum*, *Nassa reticulata*, *Buccinum undatum*. In the Memoir to Sheets 21, 28, and 29 of the

<sup>1</sup> "Geology of Londonderry," &c., 1843, p. 163.

<sup>2</sup> Report of Brit. Assoc., 1872.

Geological Survey of Ireland (1876) this list is repeated, with the addition of *Pecten maximus*.

Mr. Mark Stirrup, F.G.S., in his Paper on "The Raised Beaches of County Antrim,"<sup>1</sup> gives a list of "shells of old beach, mixed with recent ones," found on the shore at Kilroot: the species which are not marked as "recent" are—*Mytilus edulis*, *Patella vulgata*, *Trochus cinerareus*, *Littorina littoralis*, *L. litorea*, *Rissoa* sp., *Purpura lapillus*, *Buccinum undatum*, *Nassa reticulata*.

The raised beach is seen along the shore west of Kilroot railway station. On the foreshore, at Kilroot Point, there is a small exposure of estuarine clay of the lower or Scrobicularia zone,<sup>2</sup> resting on a thin bed of submerged peat, which lies on red boulder-clay. Before the present sea-wall was built, the gravels were seen to rest on the estuarine clay, so that here we have the typical succession—

Raised beach.  
Estuarine clay.  
Submerged peat.  
Boulder-clay.

The raised beach was formerly well exposed in gravel-pits by the railway, a short distance west of Kilroot Station, and yielded many rude flint implements, as has been recorded by Du Noyer<sup>3</sup> and others; but these pits are lately worked out. On the shore the raised beach may be seen as a thin band of shell-bearing gravel three to four feet above high-water mark, resting on boulder-clay, or on New Red marls. At one point the section is as shown in Plate I., fig. 2. I have the following shells noted from the Kilroot raised beach:—

*Anomia ephippium*.  
*Ostrea edulis*.  
*Mytilus edulis*.  
*Cardium edule*.  
*Venus exoleta*.  
*Tapes decussatus*.  
*T. aureus*.  
*Tellina balthica*.  
*Macra subtruncata*.  
*Mya truncata*.

*Patella vulgata*. c.  
*Trochus cinerareus*.  
*Littorina obtusata*. v. c.  
*L. litorea*. v. c.  
*Cerithium reticulatum*.  
*Nassa reticulata*.  
*Purpura lapillus*.  
*Buccinum undatum*.  
*Cypræa europæa*.

<sup>1</sup> Proc. Lit. and Phil. Soc. Manchester, xvi. (1877).

<sup>2</sup> See "Report on the Estuarine Clays," &c., p. 214.

<sup>3</sup> Journ. Geol. Soc. London, vols. xxiv, xxv.

## LARNE.

The beds at the Curran at Larne form the classic raised beach of the north of Ireland. Many papers contain references to this deposit, especially in its archæological aspect, as a famous locality for rude flint implements. I need only mention such as refer to its geological and palæontological features. Hull<sup>1</sup> records, as found in this raised beach, eleven species of mollusca. Grainger<sup>2</sup> gives a list of twenty-five species obtained by him at heights varying from ten to twenty feet above high water. In Mr. Stirrup's paper, already referred to, a list of nineteen species is given. In the Report of the Belfast Nat. Field Club [first] Larne Gravels Committee<sup>3</sup> a few species are mentioned, which were determined by Mr. S. A. Stewart. In the Report of the Field Club's second Committee of Investigation,<sup>4</sup> which was drawn up by myself, fifteen species are noted. I give a full list of the fossils which have been found, distinguishing the authorities by the initial letters of their names (H. = Hull, G. = Grainger, Sp. = Stirrup, St. = Stewart, P. = Praeger):—

*Anomia ephippium*. H. G. Sp.

St.

*Ostrea edulis*. G. P.

*Pecten varius*. G.

*P. maximus*. S. P.

*Kellia suborbicularis*. G.

*Lucina borealis*. G. Sp. St. P.

*Cardium edule*. H. G. Sp. St. P.

*C. exiguum*. Sp.

*Cyprina islandica*. P.

*Venus lincta*. S.

*Tapes pullastra*. G. Sp. P.

*T. decussatus*. P.

*Tellina balthica*. S.

*T. tenuis*. G.

*Macra* species. Sp.

*Scrobicularia alba*. Sp.

*Corbula gibba*. G.

*Saxicava rugosa*. G.

*Patella vulgata*. H. G. Sp.

*Helcion pellucidum*. G.

*H. pellucidum*, var. *lævis*. Sp.

*Trochus cinerareus*. G. Sp. P.

*T. umbilicatus*. H. Sp.

*T. magus*. G.

*T. zizyphimus*. G. P.

*Littorina obtusata*. H. G. Sp.

St. P.

*L. litorea*. H. G. Sp. St. P.

*L. rudis*. G. Sp. St. P.

*Rissoa membranacea*. H.

*Turritella terebra*. G. P.

<sup>1</sup> Brit. Assoc. Report, 1872.

<sup>2</sup> Brit. Assoc. Report, 1874.

<sup>3</sup> Proc. B. N. F. C., 1886-87, p. 519.

<sup>4</sup> *Ibid.*, 1889-90, p. 198.

<i>Cerithium reticulatum.</i> H. G.	<i>Purpura lapillus.</i> G. Sp. P.
<i>Natica</i> species. Sp.	<i>Buccinum undatum.</i> H. G. Sp.
<i>Nassa reticulata.</i> H. G. Sp.	P.
<i>N. pygmaea.</i> G.	<i>Fusus antiquus.</i> H.

The molluscan fauna of the gravels is yet by no means thoroughly worked out. Mr. Joseph Wright has recorded<sup>1</sup> sixty species of Foraminifera from these gravels.

Such full descriptions of the Curran beds have been published in the Papers already referred to, that it is only necessary to summarize that at their place of greatest development they consist of current-bedded gravels, twenty-one feet in thickness, containing marine shells and worked flints from top to base, and resting on estuarine clay, the surface of which is at high water level. The vertical position of certain bivalves proves that they lived buried in the gravels while the deposit was accumulating. This, and the bedding, show that the deposit is an old inter-tidal, or submarine, bank. Sections on different parts of the Curran vary greatly. On the south side of the railway, close to the Curran station, was seen the succession just mentioned. A hundred yards northward a bank of boulder-clay rises up, till there is only two feet of gravel on the top of it. In pits at the old pottery, six feet of gravels overlay the estuarine clay, the surface of which was here six feet above high water. In a ten-foot-deep trench, made in 1887 for the Larne outfall sewer, along the road which crosses the Curran near this old pottery, a good section was exposed, as in Plate I., fig. 3, which shows the beds actually seen in the cutting from the old pottery to the eastern shore. The thick bed of yellow sand, which at this place suddenly intervenes between the gravels and the estuarine clay, contained many shells. In the ten minutes at my disposal on the day when I saw the cutting, the following were noted:—

<i>Anomia ehippium.</i> v. r.	<i>Lucina borealis.</i> v. r.
<i>Ostrea edulis.</i> c.	<i>Pectunculus glycymeris.</i> c.
<i>Pecten varius.</i> v. r.	<i>Cardium edule.</i> c.
<i>P. maximus.</i> f.	<i>Venus exoleta.</i> c.
<i>Montacuta bidentata.</i> f.	<i>V. fasciata.</i> r.

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<sup>1</sup> "Post-Tertiary Foraminifera of N.-E. Ireland," Proc. B. N. F. C., 1879-80, Appendix.

<i>V. ovata.</i> v. r.	<i>Laonma divaricata.</i> v. r.
<i>Tapes virginicus.</i> v. r.	<i>Littorina obtusata.</i> v. r.
<i>T. aureus</i> , var. <i>ovata.</i> v. r.	<i>L. litorea.</i> c.
<i>Tellina balthica.</i> c.	<i>L. rudis</i> , var. <i>tenebrosa.</i> v. r.
<i>Scrobicularia alba.</i> v. r.	<i>Rissoa striata.</i> r.
<i>S. piperata.</i> r.	<i>Hydrobia ulva.</i> r.
<i>Patella vulgata.</i> c.	<i>Aclis supranitida.</i> v. r.
<i>Helcion pellucidum.</i> var. <i>lævis.</i>	<i>Cerithium reticulatum.</i> v. r.
v. c.	<i>Purpura lapillus.</i> c.
<i>Trochus cinerareus.</i> c.	<i>Buccinum undatum.</i> r.
<i>T. umbilicatus.</i> v. r.	<i>Murex orinaceus.</i> v. r.
<i>T. magus.</i> v. r.	<i>Melampus bidentatus.</i> v. r.

This is by far the most fossiliferous bed yet discovered in the Larne raised beach, and ten of the species are additions to the fauna; the shells were in a much better state of preservation than those of the overlying gravels.

Stirrup<sup>1</sup> mentions this sand bed as fringing the present shore from Larne [Harbour] northward to Waterloo, capped by gravels, the top of which was five to six feet above high water. The sand contained thick beds of shells, consisting for the most part of *Patellæ*, *Littorinæ*, and *Trochi*, which might be traced for several yards at a time, and then died away. He notes the following species of fossils:—*Patella vulgata*, *P. lævis*, *Pectunculus glycymeris*, *Scrobicularia piperata* (?), *Trochus cinerareus*, *Littorina littoralis*, *L. rudis*, *L. litorea*, *Purpura lapillus*, tooth of *Bos longifrons*. The last-named was found firmly embedded in the sand at its junction with the overlying gravel, and was determined by Prof. Boyd Dawkins. On account of its smaller elevation above the sea, he placed this deposit on a horizon with the raised beach at Kilroot, &c., and considered them of a later date than that of the Curran (along with which, by the way, he places the glacial raised beach of Ballyruder, which is capped by a thick deposit of boulder-clay). But in spite of the much better preservation of its fauna, there can be no doubt that the sand-bed is of the same age as the Curran gravels, and has its place, indeed, near the base of the series. Fig. 3 shows clearly how the sand runs in under the gravels, and as to the state of preservation of its fauna, it has elsewhere<sup>2</sup> been stated that the fossils in the lowest bed reached during the

<sup>1</sup> *Loc. cit.*

<sup>2</sup> Proc. B. N. F. C., 1889-90.

excavations of the Belfast Field Club Committee, were remarkably fresh and well-preserved, much more so than those of the superior beds.

This completes my own notes on the north-eastern raised beaches, but it may be allowed to me to briefly mention any records of fossils that have not been already referred to, in order that a complete view may be obtained of the raised beach fauna, so far as it is known.

In Grainger's Paper in "Nat. Hist. Review," 1859, already referred to, the following marine shells are recorded:—

WHITE ABBEY, thirty feet elevation.—*Ostrea edulis*, *Pecten maximus*, *Mytilus edulis*, *Cardium edule*, *Tapes aureus*, *Tellina balthica*, *Trochus cinerareus*, *Littorina litorea*, *L. rudis*, *L. obtusata*, *Purpura lapillus*.

GREENCASTLE, twenty feet elevation.—*Cardium edule*, *Tellina balthica*, *Littorina obtusata*, *L. litorea*, *L. rudis*, *Hydrobia ulva*, *Cerithium reticulatum*.

BANKS OF THREE-MILE WATER, ten feet elevation.—*Mytilus edulis*, *Patella vulgata*, *Balanus* sp.

JORDANSTOWN, three feet elevation.—*Anomia ephippium*, *Pecten opercularis*, *Mytilus modiolus*, *M. edulis*, *Cardium edule*, *Venus exoleta*, *V. gallina*, *Tapes decussatus*, *Mactra subtruncata*, *Tellina balthica*, *Mya truncata*, *Patella vulgata*, *Littorina obtusata*, *L. litorea*, *L. rudis*, *Turritella terebra*, *Aporrhais pes-pelecani*, *Cerithium reticulatum*, *Purpura lapillus*, *Nassa reticulata*, *N. incrassata*, *Buccinum undatum*, *Fusus antiquus*, *Pleurotorna rufa*, *Serpula vermicularis*, *S. triquetra*.

CARRICKFERGUS, forty feet elevation.—*Anomia ephippium*, *Ostrea edulis*, *Pecten opercularis*, *Mytilus modiolus*, *M. edulis*, *Cardium edule*, *Mactra subtruncata*, *Trochus cinerareus*, *Littorina litorea*, *L. rudis*, *Cerithium reticulatum*, *Buccinum undatum*, *Serpula triquetra*. In "Brit. Assoc. Report," 1874, Grainger supplies the additional information, that these were collected in a raised beach beyond Carrickfergus.

The lists from "one foot elevation" are not worth giving, in the absence of any particulars regarding the conditions under which they were found. In no case in this Paper, unfortunately, is any information given relative to the deposits from which the shells were obtained; those from "sixty to eighty feet elevation, Co. Down Railway cuttings," were certainly obtained from glacial beds.<sup>1</sup> The remainder which I have quoted above were, no doubt, obtained from raised beaches; but,

<sup>1</sup> See M'Adam, in Journ. Geol. Soc. Dublin, vol. iv., part 2, No. 2 (1850).

I believe, the height of forty feet at Carrickfergus, thirty feet at White Abbey, and twenty feet at Greencastle (which the author indicates are heights above high water) are exaggerated; so far as I am aware, the most elevated raised beach in the district is that of Larne, which rises to about twenty-two feet above high water.

Mr. W. A. Traill has noted<sup>1</sup> a few fossils of Antrim raised beaches:—

CRAIGVULLEN, three miles S.-E. of Glenarm, at the mouth of the stream, four to eight feet above high water.—*Venus* "*linota* or *obsoleta*," *Patella vulgata*, *Helcion pellucidum* var. *lævis*, *Littorina obtusata*, *L. litorea*, *Trochus* sp.

CLOSEBURN BAY, five miles S.-E. of Glenarm, in the townland of Fourscore, four to eight feet above high-water mark.—*Pectunculus glycymeris*, *Cyprina islandica*, *Patella vulgata*, *Helcion pellucidum* var. *lævis*, *Littorina obtusata*, *L. litorea*, *Trochus cinerareus*.

Lastly, we have the famous raised beach of Portrush, discovered by James Smith of Jordan-hill, and first described by Portlock<sup>2</sup>: "The remarkable accumulation of shells, mixed with sand, which occupies a bowl-shaped hollow, about ten feet above the sea on the north side of Portrush, and open in that direction to the sea." Portlock gives a list of the fossils, eighty-eight in number, supplied by Smith, and adds to these the coral *Caryophyllia Smithii*. Smith's own comment is worth quoting:—"This shelly deposit seems to have been a sheltered bay into which the shells have been drifted, with a small admixture of land-shells, washed down by floods; none of the bivalves have both valves together, but they have been but little injured by the action of the sea; I have never met with such a variety in so small a space, either in recent or ancient beds."

Grainger<sup>3</sup> gives a list of fifty-four species obtained by him in this bed, adding a few species to its fauna; Stirrup includes in his Paper a short list of its fossils; and Alfred Bell,<sup>4</sup> from material supplied by local correspondents, has added others, bringing up the total fauna to no less than 126 species and varieties. It is not necessary here to reproduce this long list, but attention is drawn to the occurrence of the following species:—*Lima hians*, *Venus verrucosa*, *Venerupis irus*, *Rissoa albella*, *R. costulata*, *Odostomia excavata*, *Adorbis subcarinatus*,

<sup>1</sup> Geol. Surv. Ireland, Memoir to Sheet 20, p. 21.

<sup>2</sup> Geology of Co. Londonderry, &c., p. 161.

<sup>3</sup> Brit. Assoc. Report, 1874.

<sup>4</sup> *Ibid.*, 1890; and also Proc. Roy. Phys. Soc. Edinburgh, vol. x. (1889-90).

*Trophon muricatus*. The Foraminifera of the deposit, to the number of sixty, have been determined and catalogued by Wright.<sup>1</sup> It is a matter for congratulation that this important deposit has been so thoroughly worked up, as some years ago it was destroyed in the process of road-making.

I have now enumerated, or referred to, all records that I know concerning the raised beach fossils of the north-east of Ireland; and it will be interesting to compare this fauna with that of the deposits which immediately underlie the raised beaches, with that of contemporaneous beds of different character, and with the present fauna of the same regions. I would refer to my Report on the Estuarine Clays, pp. 213–6, for a sketch of the geological succession and general character of the post-glacial series in the north-east of Ireland, and the changes of conditions which they prove. It may be briefly stated that the typical series is in descending order:—

Raised beaches,	} Cotemporaneous.
Upper estuarine clay,	
Lower estuarine clay.	
Submerged peat.	
Sands and gravels.	
Boulder-clay.	

The only fossiliferous Pleistocene bed yet discovered below the boulder-clay of the district, is the gravel-bed of Ballyruder, which yields a markedly Arctic fauna.

The boulder-clay of the north-east exhibits the well-known typical characteristics. Overlying it, in many places, is a fine hard red clay, almost devoid of pebbles or blocks. This bed is more fossiliferous than the stony clay which it overlies. Above this, sands and gravels attain locally a considerable development, especially in the neighbourhood of Belfast. These beds require further elucidation: so far as they have been examined they yield sparingly a fauna similar to that of the boulder clay. The peat-bed, which comes next in the succession, offers a tempting field for research. Well-preserved plant remains, and elytra of beetles, &c., are often abundant, and mammalian remains occur.<sup>2</sup> We do not yet know much of the fauna and flora of this bed, but it contains remains of hazel, alder, oak, willows, Scotch fir, sedges, and flags. Resting on the peat bed comes the

<sup>1</sup> *Loc. cit.*

<sup>2</sup> See "Report on Estuarine Clays," &c.



lower or *Scrobicularia* zone of the estuarine clay, a littoral deposit which underlies a deposit of deeper water, the upper estuarine clay, and, in other places, the raised beach or sea-bed.

We are now in a position to compare the faunas of the successive deposits of the series. This will yield the best and most instructive results if, eliminating all those species which range both north and south of the British area, we select the species which are of distinctly northern or southern type—those which either have now their habitat altogether outside British waters, or have the boundary (northern or southern) of their area of distribution within this region. This should, if the material at our disposal be sufficient for such an analysis, give us a key to the northward or southward fluctuations of the fauna during the periods of deposition of the beds under consideration. I may add that nowhere else in Ireland could such a comparison be instituted, nor do I know of any area of the same size in England or Scotland where the glacial, post-glacial, and recent molluscan faunas are all so completely represented and so available for comparison. The Ballyruder gravels and Belfast Waterworks boulder-clay are the most fossiliferous glacial deposits in Ireland. The estuarine clays, with a total fauna of 340 species, present, so far as I am aware, the richest post-glacial fauna in the British Isles; and the raised beaches, with a fauna of about 130 species, also abundantly represent the life of the period. Lastly, the extensive researches of Thompson,<sup>1</sup> Hyndman,<sup>2</sup> and Dickie<sup>3</sup> furnish us with full information regarding the existing molluscan fauna of the north-east.

For the purposes of this comparison it is necessary to assume that the shells found in the various beds lived in the neighbouring seas at the time of the deposition of the beds. There is, of course always the chance of derived fossils, but this chance is small, to judge from the very small percentage of derived forms in recent dredgings or on our existing beaches. As regards the present fauna, however, this risk has been obviated by admitting only such species as have been taken alive in the district.

The Ballyruder gravels yield a percentage of exotic forms so much higher than that of the local glacial clays, that it has been thought advisable to give this deposit a separate column. The term

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<sup>1</sup> "Natural History of Ireland," iv., 1856.

<sup>2</sup> "Reports of the Belfast Dredging Committee," Brit. Assoc. Reports, 1857, 1858, 1859.

<sup>3</sup> "Report on the Marine Zoology of Strangford Lough," Brit. Assoc. Report, 1857.

glacial clays has been used in preference to boulder-clays, since the fine clay, often without boulders, which has been already referred to, has yielded more fossils than the boulder-clay proper. The placing of the raised beaches after the estuarine clays, is not intended to signify necessarily a stratigraphical relation; but it may be assumed, with tolerable certainty, that the raised beaches are in no case *older* than the clays.

N represents a species of Arctic distribution, not now living in the British area. N represents a species, whose present distribution ranges from Britain northward only: most of these have their headquarters on the Scandinavian shores. S represents a species whose present distribution ranges from Britain southward only: most of these have their headquarters in the Mediterranean.

SPECIES.	Ballyruder.	Glacial Clays.	Estuarine Clays.	Raised Beaches.	Existing Fauna.
Rhynchonella psittacea, .. ..	N	—	—	—	—
Mytilus modiolus, .. ..	—	—	N	N	N
Pinna rudis, .. ..	—	—	—	—	S
Crenella decussata, .. ..	—	—	N	—	N
Leda pernula, .. ..	N	N	—	—	—
Arca lactea, .. ..	—	S	—	S	—
Astarte elliptica, .. ..	N	N	—	—	—
A. compressa and var. globosa, ..	N	N	—	—	—
A. borealis, .. ..	N	N	—	—	—
Venus verrucosa, .. ..	—	—	—	S	—
Venerupis irus, .. ..	—	—	—	S	—
Tapes decussatus, .. ..	—	S	S	S	—
Tellina calcarea, .. ..	N	N	—	—	—
T. donacina, .. ..	—	—	—	—	S
Gastrana fragilis, .. ..	—	—	S	—	—
Lutraria obtonga, .. ..	—	—	S	—	—
Thracia pubescens, .. ..	—	—	S	—	—
Gastrochæna dubia, .. ..	—	—	S	—	—
Pholas parva, .. ..	S	—	—	—	—

SPECIES.				Ballyruder.	Glacial Clays.	Estuarine Clays.	Raised Beaches.	Existing Fauna.
Chiton marmoreus,	..	..	..	N	—	—	N	N
C. albus,	..	..	..	—	—	—	—	N
Puncturella noachina,	..	..	..	N	—	—	N	—
Tectura testudinalis,	..	..	..	—	—	—	—	N
Emarginula crassa,	..	..	..	—	—	—	—	N
Trochus helycinus,	..	..	..	—	—	N	—	N
T. umbilicatus,	..	..	..	—	—	S	S	S
T. lineatus,	..	..	..	—	—	—	—	—
T. granulatus,	..	..	..	—	—	—	—	S
T. montacuti,	..	..	..	—	—	—	—	S
Phasianella pulla,	..	..	..	—	—	S	S	S
Rissoa costulata,	..	..	..	—	—	S	S	—
Jeffreysia opalina,	..	..	..	—	—	S	—	—
Turritella erosa,	..	..	..	N	—	—	—	—
Odostomia pusilla,	..	..	..	—	—	S	—	—
O. excavata,	..	..	..	—	—	—	S	—
Natica affinis,	..	..	..	N	N	—	—	—
Adeorbis subcarinatus,	..	..	..	—	—	—	S	—
Trichotropis borealis,	..	..	..	—	—	—	—	N
Buccinum grenlandicum,	..	..	..	N	—	—	—	—
Fusus latericeus,	..	..	..	—	N	—	—	—
Trophon truncatus,	..	..	..	N	N	—	—	N
T. clathratus,	..	..	..	N	N	—	—	—
T. barvicensis,	..	..	..	—	—	—	—	N
T. muricatus,	..	..	..	—	—	—	S	—
Defrancia gracilis,	..	..	..	—	—	S	—	—
Pleurotoma exarata,	..	..	..	N	—	—	—	—
P. decussatus,	..	..	..	—	N	—	—	—
P. trevelyana,	..	..	..	N	—	—	—	—
P. pyramidalis,	..	..	..	N	—	—	—	—

I believe that if to the above Table were added those species whose distribution is *mainly* northern or southern (instead of *entirely*, as in the Table) the changes in the character of the fauna would be rendered still more conspicuous; but the groups of shells used above will sufficiently serve the purpose.

From an inspection of the above Table the Arctic character of the Ballyrudder fauna, and the northern character of the fauna of the boulder-clays, is at once apparent. Not less striking is the distinctly southern character of the estuarine clay fauna, and of the raised beaches, when contrasted with the columns showing the facies of the existing fauna. If we add up each column, and reduce the results to percentages of the total fauna of each deposit, this result is still more striking—

—		Arctic.	Northern.	Southern.
Ballyrudder,	..	25	15	3
Glacial Clays,	..	13	5	3
Estuarine Clays,	..	0	2	6
Raised Beaches,	..	0	3	9
Present Seas,	..	0	4	3

This result may be expressed graphically, as shown below. In fig. 1 (p. 48) horizontal distance represents time. We have no data for arriving at even a rough comparison of the relative intervals between the periods under consideration, so they are assumed to be equal. On one side of a base-line the percentage of northern or southern species in each fauna is marked off. We thus get three curves, representing the increase or decrease in the northern or southern character of the fauna of the north-east of Ireland, from glacial times to the present day.

And furthermore, if, as in fig. 2 (p. 48), we let vertical distance on one side of the base-line represent percentage of northern forms, and on the other, percentage of southern forms (the one being, so to speak, of opposite sign to the other), and draw a curve, which is the mean of the

three curves in fig. 1, this curve will give an accurate representation of the changes in the character of the fauna, as a whole, during the same

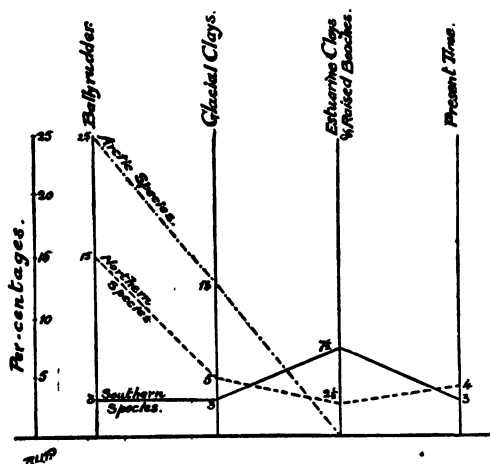


Figure 1.

period. In these two diagrams we observe the high northern character of the Ballyrudder fauna. A rapid dying out of Arctic and northern

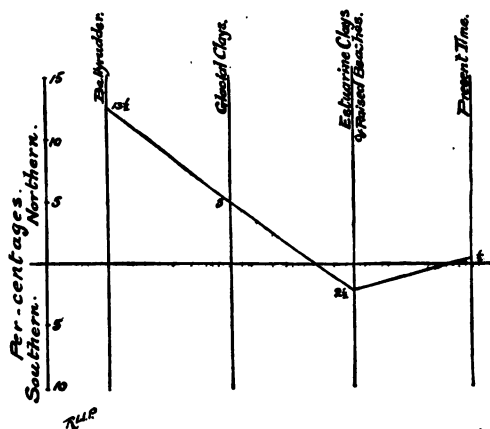


Figure 2.

species leaves the fauna of the boulder-clay still with a distinctly northern aspect. The high northern species now all disappear, and

the large increase of southern shells is accompanied by a slight further decrease of northern types, till before the next period the mean curve, indicating the general character of the fauna, has crossed the neutral line, and the fauna of the estuarine clays and raised beaches is seen to be of distinctly southern aspect. This is, however, the period of maximum dominance of the southern shells. Their number is seen to rapidly diminish, while the northern element remains almost the same, so that at the present day the neutral line has been again passed, and the fauna has assumed a slightly northern aspect.

A cause for this recent collapse of the southern fauna of the north-eastern seas has not, so far as I am aware, been suggested, nor have I any explanation to offer. It may be pointed out that the north-east of Ireland has, at present, the most northern molluscan fauna of any portion of the country, and this, as the diagram shows, is caused by the extinction of southern forms rather than by the immigration of northern ones.

The present Paper may fittingly conclude with a detailed account of a few of the more striking of these recent emigrations from the district. It is to be noted that the north-eastern part of Ireland is, both zoologically and botanically, the most boreal. The mild influences which characterize the western coast extend right up to the most northerly point of Donegal and of Ireland; and both fauna and flora, terrestrial and marine, attain their most northerly aspect only when we turn southward round Malin Head, and reach the counties of Derry and Antrim. In accordance with this statement, it will be seen that some of the shells about to be mentioned, which have now forsaken the north-eastern shores, or show a striking diminution in numbers, still flourish in the milder climate of Donegal, which is actually further to the northward; while, on the other side, their line of retreat has been down the east coast towards Dublin.

*Lima hians*, Gmel. In the estuarine clay period lived in immense abundance in Larne Lough, and more sparingly in Belfast Lough, and off Portrush. Now almost extinct in the district, a very few specimens only having been dredged; lives in abundance in Mulroy Bay, Co. Donegal, and sparingly off Dublin, but is not recorded from the south or west.

*Tapes aureus*, Gmel. Its first appearance locally is in the boulder-clay at Belfast Waterworks. It attains great abundance in the estuarine clays and raised beaches, from Larne to Greenore. As a living species it is extremely rare in the district, and in Ireland has its headquarters in the west and south.

*Tapes decussatus*, L. A southern shell, which first appeared, like the last, in the Waterworks boulder-clay. Attained immense profusion in the estuarine clay period, but has now become completely extinct in the district, having its limit in Lough Swilly on the one side, and Carlingford Lough on the other. Beyond these limits it is a common species round the Irish shores.

*Lucinopsis undata*, Penn. Attained an abundant and luxuriant development in the estuarine clay period: now almost extinct in the district, but found at Portrush and Magilligan. Lives in Lough Swilly and westward, and on the easternside at Dublin.

*Gastrana fragilis*, L. A southern shell, which appears in the estuarine clays of Strangford Lough. In a living state its nearest station is Lough Swilly. Elsewhere in Ireland, its present stations are in the south and west.

*Scrobicularia piperata*, Bell. Appears in the Waterworks boulder-clay. In the lower, or littoral, estuarine clay it is almost invariably present in immense profusion, along the whole north-eastern coast. Now quite extinct in the same area, having its nearest stations just outside these limits, in Lough Swilly and in Carlingford Lough. Common all round the rest of the Irish coasts.

*Rissoa albella*, Lovén. Occurs, often in enormous numbers, in almost every bed of estuarine clay in the loughs of Foyle, Larne, Belfast, Strangford, and Carlingford, as well as in the Portrush raised beach. Now completely extinct, and in Ireland only found at Bantry Bay in the extreme south-west.

Equally instructive is the evidence afforded by certain raised beaches of the former extension northwards and eastwards of species which are characteristic of the west-coast fauna.

*Venus verrucosa*, L. A southern shell, recorded from the Portrush raised beach, and from prehistoric shell-mounds at Rosapenna in North Donegal.<sup>1</sup> It is an abundant species in the south-west, now finding its limit on the south coast at Youghal, and on the west coast in Co. Sligo.

*Venerupis irus*, L. Another characteristic west-coast species of southern type, not now known north of Bundoran, but occurring in the Portrush raised beach.

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<sup>1</sup> W. H. Patterson, in *Irish Naturalist*, III., p. 50 (1894).

*Trochus lineatus*, D. C. Abundant at the present time on the west coast, as far north as Bundoran. Rare on the east coast, but ranges north to Ballywalter in Co. Down. Its presence in the raised beach at Fort Stewart, on Lough Swilly, attests its further former extension.

Certain genera also exhibit, as a whole, striking fluctuations. Trophon, so characteristic of glacial beds, is, with the exception of *T. muricatus* in the Portrush bed, entirely absent in the estuarine clays and raised beaches, re-appearing in the present north-eastern seas with three species. Leda, another abundant glacial genus, with three species in the local deposits of this age, is represented in the estuarine clays and raised beaches by only a single valve of *L. minuta* at Belfast, though two species inhabit our present waters. Astarte, with four species in the glacial beds, is completely absent from the estuarine clays and raised beaches, re-appearing with two species at the present day. Cyprina is, very strangely, almost absent from the glacial beds of the north-east; it is likewise extremely rare in the estuarine clays and raised beaches, though now living in abundance. Tapes, a genus of rather southern proclivities, is not represented in the Ballyrudder beds, and but very sparingly in the boulder-clays. In the estuarine clays and raised beaches all the British species are widely diffused, often in very great abundance, while at the present day one species, as already mentioned, has migrated completely from the district, and another is almost extinct. Venus, another genus of southern tendency, is unknown at Ballyrudder, and very sparsely represented (two species only) in the boulder-clays. The estuarine clays yield all the six local species, which have, if anything, increased in numbers since that period. Montacuta, unknown in the glacial beds, swarms in the estuarine clay, and is now extremely rare.

We have now traced, so far as is possible, the history and character of the marine fauna of the north-eastern corner of Ireland. We see that, following the Arctic climate that must have obtained when the raised beach of Ballyrudder was laid down, somewhat warmer seas existed during the boulder-clay period, inhabited by a fauna still distinctly northern, but containing a few southern forms, along with a diminishing number of Arctic species. It may be remarked, in passing, that the character of this fauna closely corresponds to that of the boulder-clay of Kill-o'-the-Grange, near Dublin, recently described by Professor Sollas and the writer.<sup>1</sup>

<sup>1</sup> Irish Naturalist, iv., p. 321, December, 1895.



A long period, represented by the eskers, brick-clays, and submerged peat, must have intervened before the deposition of the next bed of the series.

The peat bed, so far as we know its flora and fauna, points to a climate not much differing from that which exists at present, and to an elevation of the land slightly greater than at present. A slight submergence allowed the deposition of the lower estuarine clay, with its rather southern fauna, and a further submergence was followed by the accumulation of deposits of mud in the shape of the upper estuarine clay, of sand-banks, such as the Curran of Larne, and of shelly beach deposits, such as that of Portrush. At this period the southern element of the fauna attained its maximum. Finally came elevation of the land, and with the last change of level came the final fluctuation in the character of the animal life, a distinct return towards its former northern character, which has left the fauna as we now find it.

CLASSIFIED LIST OF THE PRINCIPAL PAPERS, ETC., USED IN THE  
PREPARATION OF FOREGOING REPORT.

GLACIAL FAUNA.

1843. BRYCE (JAMES), and GEORGE C. HYNDMAN.—“Notice of an Elevated Deposit of Marine Shells, of the Newer Pleiocene Epoch, lately discovered near Belfast.” In Portlock’s Report on the Geology of Londonderry, &c., p. 738, Appendix.
1850. M’ADAM (JAMES).—“Observations on the Neighbourhood of Belfast, with a description of the Cuttings on the Co. Down Railway,” Journ. Geol. Soc. Dublin, *rv.*, part ii., No. 2.
1860. HYNDMAN (GEORGE C.).—“Report of the Belfast Dredging Committee for 1859,” Brit. Assoc. Report for 1859.
1875. GRAINGER (REV. JOHN).—“On the Post-Tertiary Deposits of Ireland,” Brit. Assoc. Report for 1874, Trans. of Sections.
1881. STEWART (S. A.).—“Mollusca of the Boulder-Clay of the North-east of Ireland,” Rep. and Proc. Belfast Nat. Field Club (2), *i.* (1879-80), Appendix.
1881. WRIGHT (JOSEPH).—“Post-Tertiary Foraminifera of the North-east of Ireland,” Rep. and Proc. Belfast Nat. Field Club (2), *i.* (1879-80), Appendix.
1893. PRAEGER (R. LLOYD).—“Report of the Sub-Committee appointed to investigate the Gravels of Ballyruder, Co. Antrim,” Rep. and Proc. Belfast Nat. Field Club (2), *iii.* (1892-93).

1895. SOLLAS (W. J.), and R. LLOYD PRAEGER.—“Notes on Glacial Deposits in Ireland. II. Kill-o'-the-Grange,” *Irish Naturalist*, IV.

#### ESTUARINE CLAY FAUNA.

1850. M'ADAM (JAMES).—*Loc. cit.*  
 1859. GRAINGER (JOHN).—“On the Shells found in the Post-Tertiary Deposits of Belfast,” *Nat. Hist. Review*, VI.  
 1871. STEWART (S. A.).—“A List of the Fossils of the Estuarine Clays of Down and Antrim,” *Eighth Annual Report Belfast Nat. Field Club (1870-71)*, Appendix.  
 1881. WRIGHT (JOSEPH).—*Loc. cit.*  
 1888. PRAEGER (R. LLOYD).—“The Estuarine Clays at the new Alexandra Dock, Belfast,” *Report and Proc. Belfast Nat. Field Club (2)*, II. (1886-87), Appendix.  
 1858. HYNDMAN (GEORGE C.).—“Report of the Proceedings of the Belfast Dredging Committee,” *Brit. Assoc. Report for 1857*.  
 1891. BELL (ALFRED).—“Fourth and Final Report . . . upon the Manure Gravels of Wexford,” *Brit. Assoc. Report for 1890*.  
 1892. PRAEGER (R. LLOYD).—“Report upon the Estuarine Clays of the North-east of Ireland,” *Proc. R. I. Academy (3)*, II., No. 2.

#### RAISED BEACH FAUNA.

1843. PORTLOCK (J. E.).—“Report on the Geology of the Co. of Londonderry, &c.,” chap. VI.  
 1873. HULL (EDWARD).—“On the Raised Beach of the North-east of Ireland,” *Brit. Assoc. Report for 1872, Trans. of Sections*.  
 1874. GRAINGER (JOHN).—*Loc. cit.*  
 1877. STIRRUP (MARK).—“The Raised Beaches of Co. Antrim, their Molluscan Fauna, and Flint Implements,” *Proc. Lit. and Phil. Soc. Manchester*, XVI.  
 1878. HULL (EDWARD).—“Physical Geology and Geography of Ireland,” chap. VI.  
 1881. WRIGHT (JOSEPH).—*Loc. cit.*  
 1888. BELFAST NAT. FIELD CLUB.—“Report of the Committee appointed to investigate the Larne Gravels,” &c., *Report and Proc. Belfast Nat. Field Club (2)*, II. (1886-87).

1890. BELL (ALFRED).—*Loc. cit.*  
 1890. PRÆGER (R. LLOYD).—"Report of a Committee on the Gravels and Associated Beds of the Curran, at Larne, Co. Antrim," Report and Proc. Belfast Nat. Field Club (2), III. (1889-90).  
 1895. PRÆGER (R. LLOYD).—"The Raised Beaches of Inishowen," Irish Naturalist, IV.

## PRESENT FAUNA.

1856. THOMPSON (WILLIAM).—Natural History of Ireland, IV.  
 1858. DICKIE (GEORGE).—"Report on the Marine Zoology of Strangford Lough, Co. Down, and Corresponding Part of the Irish Channel," Brit. Assoc. Report for 1857.  
 1858-60. HYNDMAN (GEORGE C.).—"Reports of the Belfast Dredging Committee," Brit. Assoc. Reports for 1857, 1858, and 1859.  
 1863-9. JEFFREYS (J. GWYN).—British Conchology, II.-V.  
 1878. GUIDE TO THE COUNTY OF DUBLIN.—Edited by A. M'Alister and W. R. M'Nab.  
 1878. SÆRS (G. O.).—Mollusca Regionis Arcticæ Norvegiæ. Bidrag til Kundskaben om Norges Arktiske Fauna. I. Bløddyr.  
 1878-85. JEFFREYS (J. GWYN).—"On the Mollusca procured during the 'Lightning' and 'Porcupine' Expeditions, 1868-70," Proc. Zool. Soc. London.  
 1886. KOBELT (W.).—Prodromus Faunæ Molluscorum Testaceorum Mariæ Europæa inhabitantium.  
 1889. PRÆGER (R. LLOYD).—"The Marine Shells of the North of Ireland," Report and Proc. Belfast Nat. Field Club (2), III. (1887-8), Appendix.  
 1892. HART (H. CHICHESTER).—"Notes on Marine Mollusca collected on the Coasts of Donegal and Dublin," Zoologist (3) XVI.  
 1892. WARREN (AMY).—"Contribution towards a List of the Marine Mollusca of Killala Bay," Journal of Conchology, VII.

## IV.

MAGH ADHAIR, CO. CLARE. THE PLACE OF INAUGURATION OF THE DALCASSIAN KINGS. BY THOMAS JOHNSON WESTROPP, B.A.

(PLATE II.)

[Read 13th APRIL, 1896.]

MAGH ADHAIR, now Moyare Park, although one of the best preserved places of inauguration in Ireland, and historic as the spot where our greatest monarch, Brian, was first made king of the little realm of Thomond, has been only noticed, with unaccountable brevity, by our antiquaries and historians,<sup>1</sup> which encourages me to lay before the Academy a description of its site and sketch of its history, with plans of the existing remains.

In the townlands of Corbally and Toonagh, little over two miles north-east from Quin, Co. Clare, the road to Tulla dips into the depression through which flows the little streamlet, known by the name of the Hell river. North of the bridge, over this rivulet, we find a sort of amphitheatre, fenced by crags, and enclosed by a low bank, marked here and there by blocks of stone. In the area of this levelled space rises a large flat topped mound, girt with a fosse and bank. The tumulus (Plate II., fig. 1) measures from 85 to 100 feet on top, and is over 20 feet high; it is in perfect preservation, and does not seem to have been opened. The top has only a few sloe bushes, and a worn slab of limestone, level with the ground, on the north side. A sloping way, with steep sides, leads across the fosse westward to the level of the field. A second but much smaller mound, or rather cairn, of earth and large stones, about 10 feet high and 17 feet on top, rises 30 feet from the last on the brink of the stream. North of the great mound,

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<sup>1</sup> The only attempt at description among our predecessors being that in Ordnance Survey Letters, R.I.A., Clooney Parish, Co. Clare, and that only in manuscript. See *Annals Four Masters*, note on 1599; *Royal Society Antiquaries of Ireland, Journal*, 1891, note, p. 463.

and within the levelled enclosure, is a boulder of purple conglomerate, embedding pebbles of rose quartz and red porphyry; it is about 4 feet long by 3 feet high, and has, in its upper surface, a small oval basin,<sup>1</sup> apparently hollowed by grinding. Across the stream, 141 feet to the west, in Toonagh, stands a rough slab of limestone, 6 ft. 3 in. high, from 3 ft. to 2 ft. 6 in. wide, and 10 in. thick, forming a pillar in the line of the two mounds and the sloping footway; between it and the stream is a shattered block like the base of a second pillar.

Half a mile towards the S.-W. we find a large stone fort, Cahercalla (Plate II, fig. 2), with the triple enclosure said to characterize a royal residence.<sup>2</sup> It is built of smaller stones and with ruder masonry than the beautiful cahers in north-western Clare and its larger neighbours at Dromoland and Spansil Hill, still it is an interesting ruin, and of sufficiently imposing size. It consists of a massive central cashel, 100 feet internal diameter, with walls 17 feet thick, where best preserved, and still 8 feet high, having a defaced gateway to the east, no stones long enough for lintels remain in the ruin. The second ring is a wall 8 feet and 9 feet thick, and 6 feet high, with gates to S.-E. and S.-W., and a break or gate to N.-E., enclosing a space 214 feet in diameter. The third, and outer, ring-wall has one existing gateway to S.-E., and is 345 feet in diameter; the segment to the N.-W. is levelled. Nihell, the present tenant, states that his grandfather, when engaged on its demolition, was suddenly taken ill, and, fancying he had been "struck" by the fairy inmates of the fort, desisted from his work of destruction; this fortunately saved the caher, and beyond the removal of a small late enclosure in the central ring, no harm has since been done. Several shapeless objects of iron were found in this part of the wall, and thrown into the rubbish, which was heaped against the rampart. This recalls the iron axes, described by Sir William Wilde,<sup>3</sup> found in Caherspeenaun, near Lough Corrib. There are several forts of earth and stone, and an overturned dolmen in the adjoining townlands of Caherloghan and Creevaghbeg, which cannot be considered part of the group at Magh Adhair.

Let me briefly indicate those points in which the remains may be identified with the ancient ceremonial. Besides the elaborate article

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<sup>1</sup> Round basins also occur, with prehistoric remains, in Co. Clare in a block of the dolmen in Newgrove, and another block near the defaced dolmen of Kiltanon, both a few miles distant to the north.

<sup>2</sup> As triple Celtic forts exist outside Ireland, from Scotland to Hungary, the statement needs further examination.

<sup>3</sup> Lough Corrib, p. 245.

by O'Donovan in the "Genealogies and Customs of Hy Fiachra," we have a long account<sup>1</sup> of the inauguration of Cathal Crowderg O'Connor, who died 1224. From it we gather that the cairn or mound, on which the prince stood, had a palisade and gateway, the last guarded during the investiture by three chiefs, a fourth alone ascended the mound to give the rod to the candidate. The other chiefs, and the coarbs of the principal local saints, stood below, holding the prince's arms, clothes, and horse, and afterwards assisting him to robe and remount. The chief faced the north, and, on stepping down from the stone, turned round thrice each way, as is still the custom in Clare, on seeing the new moon. Martin, in his account of "the Western Islands" of Scotland, two hundred years ago,<sup>2</sup> describes a nearly identical ceremony at the inauguration of a Scottish chief: he was placed on a heap of stones, his followers standing round it, and one of his principal friends gave him his father's sword, "and there was a white rod delivered to him at the same time." Then "the chief druid or orator stood close to the pyramid," and made "a panegyric, setting forth the ancient pedigree, valour, and liberality of the family." In the case of the O'Briens we know very little, save that "Macnamara," in whose territory the mound stood, was chief officer. A very doubtful line in only one translation of the "Wars of Torlough" suggests that Macnamara pronounced the titles and descent of O'Brien at a "pillar" among great hosts. This may have been interpolated in the seventeenth century, but is equally likely to preserve a true tradition. An ancient tree also was used in the ceremony at an early period. The inauguration probably took place on the north side of the great mound. The chiefs guarded a gate at the foot of the sloping way; the principal spectators stood in the levelled enclosure; the "orator" recited on the cairn, and possibly the marshal presented the chief to the rank and file of his adherents in the level field beside the pillar. As for the basin-stone its use is not alluded to in the records cited above, but one occurs hollowed in the native rock at Dunadd in Argyllshire, close to the footprint which marks the spot where the Dalriadic kings were "made."<sup>3</sup> The stone at Magh Adhair has no footprint; such a stone, however, exists in Co. Clare at Dromandoora, which, if not of the

<sup>1</sup> Hy Fiachra, p. 432; Kilkenny Society Journal, 1852-3, p. 341; Royal Historical and Archæological Association of Ireland, 1870, p. 349, where the closely analogous mound, cairn, and pillar of Carnfree are described.

<sup>2</sup> Martin's "Western Islands," edition 1703, p. 101.

<sup>3</sup> Soc. Antiq. Scotland, 1878-9, p. 28, paper by Capt. F. Thomas, R.N.

native rock, may have been brought from Magh Adhair.<sup>1</sup> That there were formerly men in Clare willing to expend considerable labour and money in removing any curious stone, is shown by the removals of a huge block from Birr to Cullane by Tom Steele, of the crosses of Kilnaboy and Termon to Kilfenora, of the cross of Kilfenora to Killaloe, and of St. Senan's slab to Kilkee.

#### HISTORY.

The origin of the mound, like that of so many prehistoric remains in Clare, is attributed to the Huamorian Firbolgs in the first century; the "Lay of Carn Chonoill" giving among the names and residences of those legendary warriors that of "Adar at Mag Adair."<sup>2</sup> It is conceivable that the predecessors of the Dalcassians held sacred the grave of some chief, and that their later conquerors marked their victory by using it as a place of inauguration for their own princes,<sup>3</sup> from the fifth to the sixteenth century.

Great obscurity broods over the history of Thomond before the middle of the ninth century. From Brian's reign it abounded in historians and bards, while monastic writers collected the legends of its saints, but strange to say, as regards its rulers, we have not even a consistent list, still less a history of its early kings. Two divergent accounts remain with no name in common, from Conall, son of Eochy Balderg, in the fifth century, to Lorcan, grandfather of Brian, in the ninth. The less known list seems to bear internal marks of genuineness, and fits into the required time; the other is wrong in its chronology and defective in its succession, but it is supported by the few independent facts which do nothing to support its rival. All the princes of both lists can be placed in the Dalcassian pedigree, except, perhaps, Rebechan, son of Mothla (the latter possibly gave his name to Ballyvally, baile uí mothla, near Killaloe, in which the fort of Boruma stands). Rebechan's contemporary, Lachtna (Lorcan's father), dwelt on Craglea (where the defaced Grianan Lachtna still remains). He appears as ruler of Thomond, at the time of the invasion of Felim,

<sup>1</sup> Proc. R. I. A., vol. x., p. 441. Other footprints, the MacMahons at Mulloch Leaght, Monaghan; Belmont, near Derry; Arzon Morbihan, Brittany; Dunadd, Argyllshire. See also Kilkenny Soc. Journal, v., p. 451; Ordnance Survey of Templemore, p. 441; Delandre's Morbihan, p. 214.

<sup>2</sup> See Revue Celtique, 1894, p. 479, by Dr. Whitley Stokes.

<sup>3</sup> The conquest of Thomond by the Dalcassians seems to have been accomplished between circa 380 and 420. "Silva Gadelica," II., pp., 377, 378.

King of Cashel, about 840, in the ancient history preserved in the "Book of Munster." Perhaps, as in later times, Thomond was divided between rival houses, whose records perished in the Danish wars, while the revival of learning under Brian only celebrated that great king's ancestors, and their opponents were only remembered in dry lists like that in the "Book of Ballymote."

In face of such obscurity in the ancient histories, it is little wonder that the records of Magh Adhair only begin late in the ninth century. In 877<sup>1</sup> Flan Sunagh of Cashel invaded Thomond. Having ravaged Munster from Balboruma to Cork, he thought fit to reduce the plain of Magh Adhair, and passing the place of inauguration, stopped, in bravado, to play chess on its green. While thus engaged, King Lorcan fell upon him, aided by the stout chief Sioda, ancestor of the Macnamaras, and, after a three days' skirmish, so entangled him in the country that Flan was glad to surrender, and procure an ignominious retreat across the Shannon.

In the winter of 941 a more friendly stranger, Murchad "of the leather coats," of Aileach, after his daring king hunt round Ireland,<sup>2</sup> brought Callaghan of Cashel and other captives through the friendly state of Thomond, camping a night "on the beautiful cold Magh Adhair." In Brian's reign Malachy, the Ard Righ, overran Thomond in 982, and cut down "the ancient tree of Magh Adhair," after it had been dug from the earth, with its roots. This insult was repeated on a later tree, in 1051, by Aed O'Connor, King of Connaught. After this second disaster we hear little of interest about the place. In Macgrath's "Wars of Torlough"<sup>3</sup> it is often mentioned but in merely a historic formula. O'Brien (Conor, 1240; Brian, 1267; Torlough, 1277; Donough, 1306; Dermot and Murchad, in opposition, 1311; Donough, in opposition, 1313) goes to Magh Eir, and is inaugurated by Macnamara, who proclaims his regal title, and the chiefs and their hosts consent and rejoice. So strongly conservative was public feeling that Lochlan Macnamara, so far as is recorded, without hesitation or protest, inaugurated his enemy Dermot O'Brien, the rival of his friend Murchad, and soon afterwards willingly invested the latter with the chieftainry. The odes on these and later occasions to the reign of

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<sup>1</sup> "Book of Munster," R. I. A.; *Annals Four Masters*, at 877; Todd's "Wars of the Gaedhill with the Gaill," p. cxiii.

<sup>2</sup> "The Circuit of Ireland."

<sup>3</sup> I use the older name as more familiar at present than that of "The Triumphs." See Mr. Standish Hayes O'Grady's translation, pp. 2, 6, 10, 32, 47, 48, 69.



Elizabeth preserved by Macgrath and others tell us nothing definite of the place or ceremonial.<sup>1</sup>

In the T. C. D. list of castles, 1584, Toonagh appears to have been called "Tuanamoyre." I have not met the name again till 1839, when the adjoining field, in Corbally, was still Moy Eir, or Moy Ri, being marked "Moyross Parks" on the six-inch Ordnance Survey, for no apparent reason. I found it Moyare Park in 1891. The older peasantry remembered its great meetings, held down to the time of the famine, no doubt a survival of the ancient fair, or merrymaking, of Eanagh Magh Adhair, which was held as early as 877 : they also said that the mound was a king's grave, and that Craglakeeroge was not its name, but that of the crags to the north-east. Now, the recent Survey has overlaid all the genuine traditions, and when last year I went again over the ground, it took no small amount of cross-questioning to drive my informant to confess that it was not from his elders, but a "sapper," that he "had heard tell that it was the place where they made a king of Brian Boru."

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<sup>1</sup> In "Annals of the Four Masters," 1579, Donnell O'Brien, native chief of Clare, died, and his son Torlough was "installed." This may have been the last formal inauguration.

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#### NOTE ADDED IN PRESS.

The Book of Ballymote explicitly states that Lughad Meann seized on Thomond as an eric for the death of the Ard Righ Crimthann (378). The Annals of Inisfallen, however, say that Lughad's son Connal Eachluadh became King of Munster in 366, which would put back the date of the father's reign to 340. Among contending authorities, it is perhaps more safe to take the later date, as the Dalcassians, evidently, had only obtained the southern part of the present Co. Clare in St. Patrick's time.

## V.

## ON THE OSMOTIC PRESSURE IN THE CELLS OF LEAVES.

By HENRY H. DIXON, B.A., Assistant to the Professor of Botany, Trinity College, Dublin.

[Read JUNE 8, 1896.]

[COMMUNICATED BY DR. E. P. WRIGHT.]

IN a Paper in the Proceedings of this Academy,<sup>1</sup> I have advocated the view that the sap is drawn up in trees in a state of tension, and that under normal conditions this tension is established by means of the osmotic attraction of the cell-sap in the parenchymatous cells of the leaf, exercised on the water in the upper terminations of the water conduits.

Accordingly, it seemed to me of interest to investigate the osmotic pressures actually existing in the cells of the leaves of plants, in order to discover if these pressures are sufficient to account for the raising of the sap in the conduits by the attraction exercised by the solutions which give rise to these pressures.

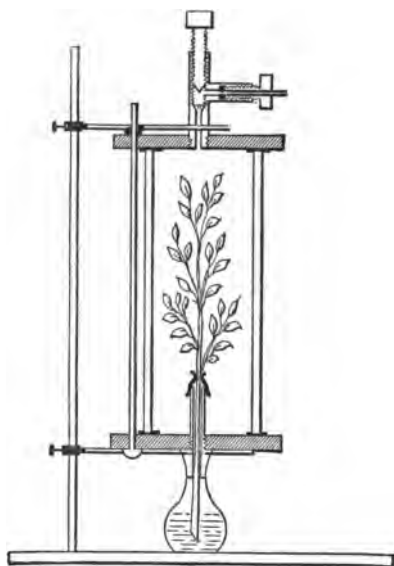
Various methods have been adopted in estimating the osmotic pressures in cells. The most usual is to immerse the cell or group of cells to be investigated in solutions of varied concentration, and finding what concentration is necessary to balance the attractive forces of the cell-sap. This may be done by direct examination of the cells, which, when the surrounding solution is too dilute, will expand; because the amount of water attracted into the more concentrated cell-sap will be greater than the amount drawn from it into the surrounding liquid which is more dilute. If, however, the surrounding solution is too concentrated, more water is drawn from the cell-sap than it can attract to itself, and consequently the vacuoles in the cells diminish in size. This leads to a contraction of the protoplasm of the cell, leaving the cell-wall as it contracts, till finally it will form a small ball lying within the cell-wall. It is evident that when the concentration of the surrounding solution is such that it neither causes extension nor plasmolysis, the attractive forces of the solution are equal to the attractive

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<sup>1</sup>, "Rôle of Osmosis in Transpiration," vol. iii., ser. 3, p. 767, Jan., 1896.

forces of the cell-sap; and we may conclude that the pressure in the cell, if it is freely supplied with water, is equal to the osmotic pressure which this solution could exert. Such a solution is said to be isotonic with cell-sap. Another way of determining when a solution is isotonic with the cell-sap, and so finding the osmotic pressure exerted by the cell-sap, is to observe tentatively what concentration is necessary in a solution which will cause no alteration in form in a piece of turgescent tissue. If the tissue expands in the solution, the latter is too dilute; if it contracts, the solution is too concentrated.

By these methods various osmotic pressures have been determined,  $3\frac{1}{2}$  to 21 atmospheres in various tissues; but, so far as I am aware, the pressures obtaining in the tissues of the leaf have not yet been ascertained.



The method I have adopted in this research for estimating the osmotic pressures existing in the leaves is the following:—A branch bearing a number of leaves is enclosed in a strong glass cylinder, capable of resisting high gas-pressure (*e.g.* 50–100 atmospheres), and the pressure is raised in this vessel by means of an air compression-pump, or by attaching it directly to a cylinder containing liquid  $\text{CO}_2$ . The lower portion of the branch projects from the cylinder and dips into a glass vessel containing a weighed quantity of water. These arrangements are shown in the above figure.

It is evident that when the gas-pressure in the glass vessel surrounding the branch is raised and maintained above the osmotic pressure of the cells of the leaf, that water will be forced from these cells back into the conduits of the branch and into the vessel beneath. This will become apparent in two ways: firstly, by the flagging of the leaf, inasmuch as the rigidity of the leaf is due to the internal pressure of these cells, so that when this pressure is overcome by the external gas pressure the leaf will flag; secondly, by the increase of weight in the vessel beneath containing the water into which the branch dips. For every branch, then, we may expect to find a pressure above which water will be forced back from the leaves into the stem by reason of the squeezing out of the osmotic cells, and below which water will rise through the conduits to the leaves, on account of the osmotic attraction of the cell-sap of the osmotic cells. When this critical pressure itself is maintained around the branch, water will remain stationary in the plant. In carrying out these observations, the form of apparatus I have used consists of a strong glass cylinder of specially well-annealed glass, 50 cms. long, 10 cms. in diameter, and with walls 1 cm. thick. Such a glass cylinder should, according to calculation, be capable of resisting an internal pressure of at least 100 atmospheres. The ends of this glass cylinder are closed by means of two heavy gun-metal castings, which project over the side of the cylinder so as to take three long bolts with nuts, which draw the castings together on the cylinder. Leather-washers, soaked in bees' wax and turpentine, are inserted between the ends which are ground flat and the cylinder to make the joints air-tight. The lower end is perforated centrally, and in the perforation is sealed hermetically a narrow brass tube, about .5 cm. in diameter, projecting into the cylinder. This tube includes the stem of the plant to be experimented with, the lower end of which projects out of the cylinder while its leaves are enclosed. To make an air-tight connection between the tube and the stem, a stout rubber tube is first bound on to the upper end of the brass tube. The branch is then inserted into the rubber tube, and, before it has been pushed completely down, a portion of it just above the rubber is coated with thick glue, so that when it is shoved down into its final position with reference to the tube, it carries this glue down into the rubber tube. When it is in position, a copper wire is bound tightly round the rubber, and draws it into close contact with the glue. To complete the joint, a little glue is smeared over it. This form of joint is simple and highly satisfactory. The upper end of the cylinder is also perforated centrally to admit the gas coming from the pump or bottle. This is a simple screw-joint, made tight by a leather-washer. To the upper end, and on

the inside, are also attached three hooks, from which are suspended a wire basket, carrying drying materials, and a manometer. The latter consists of a simple, straight glass-tube, closed at one end; the other end dips into a small vessel containing mercury. This tube is marked off with  $\frac{1}{2}$ ,  $\frac{1}{3}$ ,  $\frac{1}{4}$ ,  $\frac{1}{5}$ , &c., of its length from its closed end, and the position of the mercury index tells directly the pressures in atmospheres. When the upper end of the glass-cylinder is in position, the drying materials and manometer hang in the cylinder. The connection between the glass-cylinder and pump or bottle of  $\text{CO}_2$  is made by means of a flexible lead tube with screw couplings.

The results described in this Paper are necessarily only preliminary, as I was unable to procure, by the pump at my disposal, air-pressures above 8-10 atmospheres. Higher pressures were obtained by means of liquid  $\text{CO}_2$ , as there seemed *a priori* no reason to believe that the presence of  $\text{CO}_2$  would falsify the results of experiments which were not continued for a long duration. However, subsequent experimental work showed that the presence of this gas profoundly modified the behaviour of the leaves when exposed to high pressures, and consequently rendered the experiments made with  $\text{CO}_2$  of little value in estimating the actual osmotic pressures obtaining in the leaves under normal conditions, although they have an important bearing on the question as to whether the tension is established in the sap directly by evaporative or osmotic actions in the leaf.

I hope immediately to proceed with the investigation of this question (*i.e.* the actual osmotic pressures obtaining in the cells of leaves), as I have been, through the kindness of Mr. S. Geoghegan, C.E., put into a position of dealing with high air-pressures.

In the first experiment, a short branch of *Acer macrophyllum* was sealed into the high-pressure apparatus, and the pressure raised by means of an air-pump, and maintained for fifteen minutes at a pressure between 8 and 10 atmospheres. During this time gas was continually bubbling out from the lower end of the branch, showing that the pressure had been transmitted to the inner tissues. No loss of turgescence, however, of the leaves could be observed.

In a second experiment, a similar branch was exposed to a pressure of 8 or nearly 8 atmospheres during fifteen minutes, and during this time showed no loss of turgescence.

From these two preliminary experiments, it appears that the pressure within the cells of the leaves of *Acer macrophyllum*, which internal pressure confers rigidity on the leaves, was greater than 8 atmospheres. The osmotic attraction which would give rise to this pressure would be capable of drawing up a column of water 240 feet high.

In a similar experiment, a branch of *Crataegus oxyacantha* was exposed to a pressure of about 8 atmospheres for fifteen minutes without showing signs of loss of turgidity.

As the pump I had at my disposal was unable to compress air above a pressure of about 10 atmospheres, I discarded it in favour of using a bottle containing liquid CO<sub>2</sub>. This was connected with the high-pressure apparatus by suitable couplings; and, by carefully opening the valve at the mouth of the bottle, the pressure could be adjusted at will to any pressure up to 60 atmospheres. This has the additional advantage that careful observations are possible while raising the pressure, which cannot be done while using the pump unless an assistant is employed.

By means of this arrangement, the pressure was raised round the same branch as was used in the last experiment, to 16 atmospheres, and was maintained at this for fifteen minutes. But even at this pressure the leaves showed no loss of turgescence. When the pressure reached 10 atmospheres, the bubbling of gas through the stem became very marked.

As it appeared possible that a certain amount of collapse of the osmotic cells of the leaves might take place without making itself noticeable by the flagging of the leaves, a number of experiments were made in which the branch dipped into a vessel beneath, which latter was weighed before and after the experiment. Any increase in weight of this vessel would be due to the forcing backwards by the external pressure of the cell-sap contained in the cells of the leaves, which would in turn displace a certain amount of water from the conduits of the branch into the vessel. A decrease, on the other hand, of the weight of the vessel would show that the external pressure had not crushed the osmotic cells, and that they had, in spite of its action, drawn up water from the vessel.

The first experiment of this kind was made on a branch of *Acer macrophyllum*, which bore 14 well-grown leaves. This branch was sealed into the high-pressure apparatus, and kept at a pressure of 8 atmospheres; during one hour of intermittent sunlight this branch drew up 0.1 gr. from the vessel below.

A similar branch, similarly arranged, and exposed to a pressure between 8 and 9 atmospheres, drew up, in one and a-half hour's sunshine, 0.342 gr. of water from the weighed vessel.

From these experiments, it follows, that the osmotic cells of the leaves of *Acer macrophyllum* were able to remain turgescient and draw up water against a pressure of 8 atmospheres. Consequently, the osmotic solution in the cells must be capable of generating a tension

equivalent to 8 atmospheres pressure, by attracting water from the conduits. Such a tension would be capable of drawing up a column of water 240 feet high, provided the column of water was submitted to such conditions that it would not break. Dr. Joly and myself have shown elsewhere that these conditions obtain in the conducting tissues of plants.<sup>1</sup>

All the trees I have experimented with up to the present do not, however, show that their leaves possess such high osmotic pressures when surrounded with CO<sub>2</sub>. Thus the specimens of *Cytisus laburnum*, investigated by means of the high-pressure apparatus, showed that they were unable to transpire against an external pressure of more than 6 atmospheres. Above this pressure the leaves begin to collapse, and water is forced back from them into the stem. It is, however, very probable that all the leaves are not put out of activity in transpiration simultaneously. Thus, I have observed, with *Cytisus laburnum*, that the old leaves begin to show collapse by losing their glossy surface, and rolling back from the edges at a pressure of 6-7 atmospheres, while the young, small leaves, which are composed of growing tissues, remain stiff and turgid, even at 16 atmospheres. This is quite in accordance with Wieler's observations on the internal pressure of the cells of the cambium, which he estimated at 13-16 atmospheres.

A preliminary experiment on *Cytisus laburnum* showed that the leaves of this plant flagged markedly after an exposure of five to ten minutes to a pressure of 16 atmospheres. The flagging in this case is indicated by the folding down of a leaf from the base of its petiole, and the folding back of its leaflets, so that the whole leaf has the appearance of the leaf of a sensitive plant (*Mimosa pudica*) which has been stimulated. Besides these motions, the surface of the leaf loses its gloss and becomes dried-looking, the edges of the leaf roll up, and the expanded portion becomes crumpled. The general appearance of the leaves after twenty minutes exposure to 16 atmospheres is that of a leaf which has been exposed to a high temperature and afterwards dried. Microscopic examination of the cells of these leaves shows the protoplasm contracted from the cell-wall just as it is in plasmolysed cells. This appearance is probably brought about by the cell-wall being pressed in on the protoplasm, and causing the latter to force out its watery contents. When the pressure is relieved, the cell-wall, by virtue of its elasticity, recovers its form, while the protoplasm remains contracted within. The space included by the cell-walls does not, however, attain the dimensions it possessed when the cell was

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<sup>1</sup> Phil. Trans. Roy. Soc., vol. 186 (1895), B.

turgescant, as in that case it was distended by internal pressure, and consequently the leaf formed of such collapsed cells is flaccid.

After I had obtained this result, I set about to determine the critical pressure for this plant, *i.e.* the pressure at which *Cytisus laburnum* would cease to draw up water in transpiration, and above which the cells of the leaf would be forced to collapse, and water would be driven back from them into the stem.

(1). In the first experiment, a small branch of this tree carrying 9 leaves was fixed in the apparatus. The pressure was maintained at 16 atmospheres. During one hour of diffused light, while the conditions within the apparatus were kept favourable to transpiration, *i.e.* the space was dried by calcium chloride, 0.950 gr. were forced from the leaves through the stem into the flask below. During the first ten minutes of this experiment the leaves began to flag, and soon showed all the appearances described above.

(2). A branch of the same tree, carrying 12 leaves, some old and some young, was submitted to a pressure of 8 atmospheres. After one hour of bright sunshine the vessel into which the branch dipped was found to have gained 0.400 grs. During this time the old leaves had become flaccid, while the young leaves remained turgid. Even the old leaves did not become markedly flaccid during the first forty minutes of the experiment.

(3). A branch with 8 leaves was exposed to a pressure of 6 atmospheres during one hour of mostly bright sunshine. During this time the leaves showed no signs of becoming flaccid, but the surface lost some of its gloss. On weighing, it was found that the vessel below had lost 0.007 gr. of water. This amount, however, comes within the limits of error of the experiment, and consequently we may assume that neither upward nor downward motion of water occurs in these branches when the leaves are exposed to a pressure of 6 atmospheres. In this experiment, when the pressure was removed, the leaves recovered their gloss.

(4). Against 4 atmospheres, the same branch, in intermittent sunshine, transpired 0.622 gr. in one hour and twenty minutes, while all the leaves remained quite turgid.

At the conclusion of this series on this branch I measured the amount it transpired at normal pressures still surrounded with CO<sub>2</sub> gas, and found it to be 1.244 gr. in one hour and 10 minutes. In air at normal pressure the same branch transpired in one hour 0.966 gr. During these last two experiments, the leaves were slightly faded. These experiments are summarized in the following Table.



TABLE I.

*Cytisus laburnum*.

	Pressure in Atmo- spheres.	Conditions of Light.	Duration of Experiment.	Amount of Water Transpired.	REMARKS.
A.	16	Diffused light.	60 minutes.	- 0.950 gr.	A fresh branch with 9 leaves. Old leaves crumpled after 10 minutes; young leaves remained turgescer throughout.
B.	8	Sunshine.	60 minutes.	- 0.400 gr.	Fresh branch with 12 leaves. Old leaves crumpled after 40 minutes; young still turgid.
C.	6	Bright light and sunshine.	60 minutes.	+ 0.007 gr.	A branch which had already been used in experi- ment D, bearing 8 leaves. At the end of this experiment the leaves had lost some of their gloss.
D.	4	Bright light and sunshine.	80 minutes.	+ 0.622 gr.	Fresh branch with 8 leaves, all of which remained quite turgid throughout.
E.	1	Sunshine.	70 minutes.	+ 1.244 gr.	Same branch as in experiments C and D. Leaves became a little flaccid.
F.	1	Sunshine.	60 minutes.	+ 0.996 gr.	Same branch as in C, D, and E. Leaves still somewhat flaccid.

N.B.—In experiments A.—E. inclusive the branch was surrounded with CO<sub>2</sub>; in experiment F. the CO<sub>2</sub> was replaced by air.

The decrease in the rate of transpiration with the increase of pressure which is indicated by these results is, doubtless, more marked than here appears, as it is well known that the rate of transpiration of a branch falls off rapidly from the time of cutting it. In the experiment C at 6 atmospheres which was the second to be made with this branch, this decrease would have been small, but in the succeeding experiments would have become more exaggerated.

It may be noted that the amount transpired at normal pressures was not diminished by the presence of the  $\text{CO}_2$  surrounding the leaves.

As it appeared quite possible that different examples of the same species might have different osmotic pressures in their leaves, these branches were all taken from the same individual, and from a height of about 6 feet from the ground. This last precaution is necessary, as it may be that at different heights in the tree, different pressures obtain. I propose investigating these points at a later date.

In this series of experiments there are two sources of error tending to make the critical pressure appear lower than it is in reality:—1st. The mechanical crushing of the conduits themselves owing to the external pressure. When the osmotic cells experience the pressure, they may, without themselves suffering any collapse, move in on the conducting tissues, which, although they are specially provided to resist external pressure as well as internal tension, are elastic to some extent, and consequently will become somewhat contracted. This will expel a certain quantity of water from them into the vessel beneath; and, as the vessel was taken away immediately after the pressure in the glass cylinder was lowered, the conducting tissues may not have had time to reassume their former volume. By this means a quantity of water would be forced back into the vessel and remain there, and would tend to counteract the loss due to transpiration. As the greatest amount of water I have observed forced back in this way from a branch, which was larger than the branch used in these experiments, was about 0.1 gr., as will be seen later, we may place the critical pressure of the branch of *Cystisus laburnum* at 6–8 atmospheres. The second source of error is more difficult to allow for. The presence of the  $\text{CO}_2$  surrounding the leaves undoubtedly acts injuriously on the cells of the leaf, so that a leaf which has been surrounded with  $\text{CO}_2$  for several hours, sometimes shows a darkened appearance, and collapses at a lower pressure than one which has been put in fresh into the apparatus. With this plant (*Cytisus laburnum*), however, the injurious effects of  $\text{CO}_2$  are not so marked nor so rapid in their manifestation as in others. Thus the leaves do not become blackened, nor is the critical pressure markedly lowered, so far as my present observations have gone, within the first six hours immersion in  $\text{CO}_2$ . All the experiments quoted above were made within this time.

As an illustration of how the  $\text{CO}_2$  affects the transpiration and turgescence of the leaves, I will add the two following Tables of experiments on *Tilia americana*, which I have found very sensitive to this gas.

TABLE II.  
*Tilia americana* IN CO<sub>2</sub>.

	Pressures in Atmosphere.	Conditions of Light.	Duration of Experiment.	Amount of Water Transpired.	REMARKS.
A.	15-16	Dull.	60 minutes.	- 2.284 gr	Fresh branch with 10 leaves. At the end of 15 minutes collapse of leaves apparent. At the end of the experiment all leaves were shrivelled.
B.	10	"	40 minutes.	- 0.988 gr.	Fresh branch with 9 leaves; collapse at end of experiment apparent but not marked.
C.	7-10	"	60 minutes.	- 0.171 gr.	Same branch as was used in A. The leaves were flaccid from beginning to end.
D.	7-8	"	60 minutes.	- 1.452 gr.	Fresh branch with 8 leaves; collapse but slight. Leaves rolled at edges; unrolling began after the pressure was reduced to normal for 10 minutes.
E.	6	Sunshine.	60 minutes.	- 0.659 gr.	Fresh branch with 12 leaves. No loss of turgescence apparent.
F.	4	Bright diffused light.	45 minutes.	- 0.287 gr.	Same branch as had been used in E., and had been altogether 2 hours in CO <sub>2</sub> . After 30 minutes some leaves slightly crumpled.
G.	4	Sunshine and bright light.	60 minutes.	- 0.182 gr.	Fresh branch with 10 leaves. Remained quite fresh and turgescant throughout.
H.	3	Sunshine and bright light.	60 minutes.	+ 0.506 gr.	Fresh branch with 11 leaves. Remained quite turgescant throughout.

TABLE III.  
*Tilia americana* IN AIR.

	Pressure in Atmo- spheres.	Conditions of Light.	Duration of Experiment	Amount of Water Transpired.	REMARKS.
A.	6	Dull light.	15 minutes.	+ 0.029 gr.	Fresh branch with 4 large leaves.
B.	5	Diffused light.	60 minutes.	+ 0.076 gr.	Fresh branch with 9 leaves. No loss of turgescence apparent.
C.	4	Diffused light.	60 minutes.	+ 0.111 gr.	No loss of turgescence.

Experiment C. in Table III. is subject to a correction for the elasticity of the branches' conduits. In determining the amount of water transpired, the vessel beneath was placed in a position before the pressure was raised in the glass cylinder and removed for its second weighing, while the pressure was still maintained. Consequently some water was squeezed back from the conduits, owing to their elastic yielding to the pressure, and remained in the vessel, diminishing the amount of transpiration observed. In order to estimate how much ought to be allowed for this, an experiment was made in which the same branch was raised to a pressure of 6 atmospheres for ten minutes. While the pressure was maintained a weighed vessel containing some water was supplied to its protruding end, and then the pressure was lowered to normal atmospheric pressure. After ten minutes the vessel was reweighed and was found to have lost 0.108 gr. due to the elastic recovery of the conduits. When this allowance is made in experiment C., Table III., the amount transpired becomes 0.219 gr., instead of 0.111 gr.<sup>1</sup>

In order to determine whether this elastic contraction of the conduits occurred chiefly in the conduits of the stem or leaf, experiments were made in which a branch was first exposed to a pressure of 6 atmospheres for ten minutes, and while the pressure was still maintained, a weighed quantity of water was supplied to its lower end which protruded from the high-pressure apparatus. The pressure was then immediately lowered, and the branch was left to draw up water from below for ten minutes by means of its elasticity, and the amount which is drawn up is measured by a second weighing. When this amount is compared with the amount drawn up in a similar experiment with the same branch when all the blades of the leaves are removed, it is found that the former is very much greater than the latter quantity. Thus with a branch of *Tilia americana* bearing 11

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<sup>1</sup> The fact that the presence of CO<sub>2</sub> in contact with the leaves modifies so profoundly their power of drawing up water against pressure, appears as an additional argument for believing that the osmotic properties of the mesophyll-cells is a more important factor in transpiration than the imbibition or capillary phenomena of the cell-wall. For we can hardly believe that the solution of this gas in the water could possibly reduce the surface-tension sufficiently to account for the difference observed; whereas it is readily comprehensible that the presence of CO<sub>2</sub> would greatly reduce the osmotic pressure of the cells by introducing changes in the primordial utricle (possibly owing to the exclusion of oxygen and consequent intramolecular respiration), or even by forming insoluble substances with the solutions in the vacuoles.

DIXON—*On the Osmotic Pressure in the Cells of Leaves.* 73

leaves, the first amount was 0.108 gr., while the latter was only 0.02 gr., an amount which approaches the limits of error of the experiment. From this we may conclude that the elastic contraction takes place chiefly in the conduits of the leaves.

I am at present making arrangements of repeating my experiments conducted in  $\text{CO}_2$  with air, in view of the difference in the critical pressure obtained in the two methods.

## V.

## THE ETHNOGRAPHY OF BALLYCROY, COUNTY MAYO.

By CHARLES R. BROWNE, M.D.

(PLATES III. AND IV.)

[Read 11th May, 1896.]

## CONTENTS.

	PAGE		PAGE
I.—INTRODUCTION, . . .	74	III.—ANTHROPOGRAPHY— <i>continued</i> .	
II.—PHYSIOGRAPHY, . . .	75	4. <i>Psychology</i> , . . .	94
III.—ANTHROPOGRAPHY:—	76	5. <i>Folk-names</i> , . . .	97
1. <i>Methods</i> , . . .	76	IV.—SOCIOLOGY:—	97
2. <i>Physical Characters</i> , . . .	77	1. <i>Occupations</i> , . . .	97
(A) General characters, . . .	77	2. <i>Family-life and Customs</i> , . . .	99
(B) Statistics of Hair and Eye Colours, . . .	82	3. <i>Food</i> , . . .	101
(C) Physical Proportions, . . .	84	4. <i>Clothing</i> , . . .	101
(D) Detailed List of Mea- surements, . . .	85	5. <i>Dwellings</i> , . . .	102
3. <i>Vital Statistics</i> (General and Economic)— . . .	90	6. <i>Transport</i> , . . .	102
(A) Population, . . .	90	V.—FOLK-LORE, . . .	103
(B) Acreage and Rental, . . .	91	1. <i>Customs and Beliefs</i> , . . .	103
(C) Language and Educa- tion, . . .	91	2. <i>Legends and Traditions</i> , . . .	106
(D) Health, . . .	92	VI.—ARCHÆOLOGY:—	106
(E) Longevity, . . .	94	1. <i>Survivals</i> , . . .	106
		2. <i>Antiquities</i> , . . .	107
		VII.—HISTORY, . . .	108
		VIII.—CONCLUDING REMARKS, . . .	110
		IX.—BIBLIOGRAPHY, . . .	111

## I.—INTRODUCTION.

THE usual local ethnographic survey undertaken annually as part of the work of the Anthropological Laboratory, Trinity College, was last summer carried out by me in the district known as Ballycroy, a portion of the barony of Erris, Co. Mayo, which was considered worthy of study, owing to the differences, said to exist, between its inhabitants and the natives of other parts of the same barony.

As the Mullet, Iniskea, and Portacloy were the subjects of last year's inquiry this may be considered as a supplementary survey, practically completing the barony of Erris, and for this reason such

census returns as apply to the whole of Erris, taking no account of smaller divisions, are quoted in this Paper.

Though, in some ways, not at all so primitive in habits and modes of life as the people of the districts previously described, the population of this district is worthy of notice, as being originally a colony from another part of Ireland, which have remained practically unmixed with the local peoples until the present day.

In his extremely valuable and interesting little work on Erris, Mr. Knight makes a statement which even now, after the lapse of sixty years, needs but little qualification, when he says: "I have said that there was a difference between the inhabitants of this district and the other parts of Erris. The Irish Channel scarcely makes such a difference between the inhabitants of the sister islands as Tulloghaan Bay makes between Ballycroy and Erris proper."

The facilities and difficulties experienced in carrying out the work of inquiry differed considerably from those experienced in other localities, the greatest of the latter being the extremely scattered nature of the population, and the absence of any assemblage of houses large enough to be termed a village or even a hamlet.

## II.—PHYSIOGRAPHY.

Ballycroy has tolerably well-defined boundaries, it lies along the coast-line, about eighteen miles south of the Mullet, and is separated from the rest of Erris; Tulloghaan Bay and the Owenmore river form its northern boundary; and the mountains of Maamthomas, Nephin Beg, and Gorslieve bound it on the east and south-east. The length of its sea-coast, counting indentations, is about forty-seven miles (this estimate, however, includes the islands of Annagh and Inisbiggle, and some smaller islets which do not belong to Ballycroy proper).

As a rule the waters are shallow all along the coast, which, though rising in some places to a considerable height, is, as a rule, rather low.

The surface of the district does not present any very great variety; it gradually slopes upwards from the sea-coast to the mountains, and has a more or less hilly or rolling surface, with an average elevation of not more than two hundred feet above the sea-level. A large portion of this surface is bog, most of it still in a virgin state. Mr. Knight estimated that of the area of over 30,000 acres, about 3675 would be "*green acres.*" The underlying rock is mica slate or



granular quartz. In the lower parts of the district there are several lakes.

The climate is very mild, there being but little frost or snow in winter; but, as might be expected from the situation of the locality, it is very moist, rains being both heavy and frequent, and storms of great violence often sweeping over the region from the westward. Vegetation flourishes well, owing to the mildness of the climate, a good example of which is the fact that palms and other exotics grow well in the open air in the grounds of General Clive at Claggan, in the southern part of the district. Trees of various kinds flourish in the valleys, and wherever sheltered from the prevailing winds. In the valleys among the mountains, the red deer used, at one time, to be met with in some numbers, but, within the past forty years, they have become quite extinct. Wild fowl, in great numbers, visit the lakes and coast-line in the winter-time, among them wild swans, which principally frequent Lough Fahey, near the coast. The number of the smaller wild animals is very considerable.

### III.—ANTHROPOGRAPHY.

1. *Methods.*—The modes of measurement and of taking observations were precisely the same as those employed in the visit to the Mullet district in 1894, the observation forms and nigrescence cards were also of the same patterns; as all these have been described in previous reports, they need no further mention here.

The instruments employed were those used in the other surveys, with one exception, a "Trinity" tripod camera of "half-plate" size, made by Messrs. Curtis Bros., of Suffolk-street, Dublin. This instrument, which is very light, strong, and compact, did its work well, and stood a good deal of rough handling, without suffering in the least. The "Trinity" hand-camera by the same makers, which did good work the previous year, continued to do well, though the weather was not very suitable for "snap-shot" work, and the brand of plates used was not quite satisfactory. The value of a hand-camera for field-work, as an aid to, or substitute for the heavier and more slow tripod stand-camera can hardly be overrated, as it can be employed for taking the portraits of persons who cannot be induced to get photographed by the other instruments, and it can also be used on very rough ground or in high winds, where the other camera could not be kept steady; for objects in motion, and local customs or occupations, it is invaluable. The chief difficulties met with were: the

scattered state of the population, and the absence of villages in which many people might be seen together, also the difficulty in reaching many parts of the district, owing to the paucity of roads and the soft boggy nature of much of the land. In some instances (more than a third of the whole) the men measured were at work in the bogs preparing the way for a new road, a long distance from any public highway, and the weather being broken and rainy, the bog was soft, making walking difficult.

Here, as in some other places previously described, the custom of cropping the hair rather close made it very difficult to ascertain the exact shade of colour.

A considerable number of photographs were taken, including portraits and groups, illustrative of the customs, modes of life, and habitations of the people, besides several views showing the nature of the surface and coast-line, and several of the antiquities of the district.

## 2. *Physical Characters.*

(A.) *General characters.*—There is, on the whole, a great uniformity of appearance in the people of this district, though, on closer inspection, at least two distinct types may be discovered.

The general appearance of the people is rather pleasing, many of the men are handsome, and the women, too, are often good-looking, but, as observed in the reports on the other districts surveyed, both sexes seem to age rather rapidly, and some of the men become wrinkled very early.

*Stature and bulk.*—The men are usually stoutly built, and of about the middle stature, though extremes, in this respect, are more common than observed in the Mullet or the Inishkea islands.

A few men of small stature were met with, and about an equal number of tall men.

The average height of the fifty men measured was 1721 mm., or a little under 5 ft. 8 in., the extremes were 1576 mm. (5 ft. 2 in.) and 1838 mm. (6 feet).

The shoulders are broad and square, and the upright carriage of many of the men is very noticeable.

*Head.*—The head is massive and well-shaped, usually broad just above the ears; it is usually either brachycephalic or mesaticephalic, though a few cases of dolichocephaly were observed, one of a very marked degree (70·7, or when reduced to the cranial standard, 68·7),

which might be fairly called scaphocephalic. The mean cephalic index, when reduced to the cranial standard by the subtraction of two units, is 78·5 (or almost exactly that of the natives of Inishbofin).<sup>1</sup>

The cranial curve rises to a fair height (mean altitudinal index, 65·6), sweeps evenly backwards, and descends rather abruptly to the external occipital protuberance.

The forehead is broad, seldom receding, and not very high; the skin is often a good deal wrinkled, even in comparatively young men, but not so much so as in the case of the fishing populations. The eyebrows overhang the eyes considerably, and are thick and rather level. The glabella and superciliary ridges are often large.

*Face.*—The face, though often long, is rather oblong in outline, owing to the breadth of the jaws in the bigonial region. The cheekbones are, as a rule, prominent. The ridge or fold of skin at the root of the nose is not as common, nor when seen, of as large size as in the men of the fishing populations. The eyes have usually blue or light grey irides, seldom hazel or brown, but it should be noted that the percentage of "light" eyes in adults, 78·7 (a much lower figure than observed in any of the districts yet reported on) shows a larger proportion of dark-eyed people in the population of Ballycroy.

The eyes are deeply set, and are placed rather wide apart; there are often wrinkles around them, as is generally observable in the west. The eyelashes are dark and long.

The nose is straight usually, sometimes sinuous, seldom aquiline or *rétroussé*. The mean nasal-index is 63·9.

The mouth is large, and the lips of medium thickness. The teeth are, when not spoiled by excessive smoking, small, white, and very even. The angles of the jaw are rather pronounced and square, which gives an oblong outline to the face when viewed from the front. The chin is often prominent. The ears are usually flat, but in about a third of the cases observed are outstanding. But few abnormalities of this organ were observed; in twenty-two instances, out of the fifty men noted, the lobule was attached; in one case it was absent, and in another extremely small, but great variations in the form of the pinna, such as were observed in some parts of the Mullet, were not noticeable in Ballycroy.

*Skin.*—The complexion is fair or ruddy, seldom freckling; sallowness is not common, even in those with dark eyes. As noted in other sections, wrinkles seem to come rather early.

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<sup>1</sup> Of the fifty men measured, 18 were brachycephalic, 26 mesaticephalic, and 6 dolichocephalic.

*Hair.*—The hair is usually a dark brown; next, in order of frequency, comes the lighter shades of brown; then black, which is commoner here than in the Mullet; then fair, and lastly red. The growth of the hair is fairly abundant, though baldness is not uncommon. It is often wavy or curly. The beard is usually somewhat lighter in colour than the hair of the scalp, and, if allowed to grow naturally, seems to have, in many cases, a tendency to fork at the end.

The nigrescence index, for the adults of both sexes, is 57·71, showing a larger percentage of dark and black hair than in any district as yet surveyed.

The foregoing description is, of course, a general one, applying only to the prevailing type; there is, however, a second type not unfrequently met with, the chief characters of which are, long oval face, with but slightly marked angles to the jaws, less prominent cheek bones and sharper features.

The figure seems to be slighter in youth, but to exhibit a tendency to put on flesh with advancing years. The hair, in this type, is usually lighter than the prevailing tint, but may be of any colour, owing to admixture.

The various authors who have written respecting the men of Ballycroy are fairly agreed concerning them. They usually describe the people as of below the medium height, dark-haired, and athletic.

In Knight's "*Erris in the Irish Highlands*,"<sup>1</sup> they are thus described: "This colony of Ulstermen, at whatever time they settled in this country, still retain the ancient dialect of language used in the north; intermarry almost exclusively with one another; a hardy, low-sized, dark-featured race; bold, daring, and intrepid in danger; not good-tempered, but hospitable to an extreme." And again: "The mountaineers are remarkably stout and healthy. . . . The journeys they make are quite extraordinary. A fellow in Ballycroy thinks nothing of taking a ten-gallon keg of whisky, weight 150 lbs. at least, and crossing the mountains to Newport, a distance of twenty miles, sells it, and returns home in the evening, without the slightest appearance of fatigue, and carelessly resumes his usual occupation."

Maxwell<sup>2</sup> gives the following description of the peasantry of Co. Mayo, including the people of Ballycroy, his own locality:—

"In personal appearance the western peasantry are very inferior to those of the other divisions of the kingdom. Generally they are

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<sup>1</sup> Page 106.

<sup>2</sup> "*Wild Sports of the West*," chap. xliii.

undersized, and by no means so good-looking as their southern neighbours; and, I should say, in other points they are equally deficient.<sup>1</sup> To overcome their early lounging gait and slovenly habits is found by military men a troublesome task; and while the Tipperary man speedily passes through the hands of the drill-sergeant, the Mayo peasant requires a long and patient ordeal before a martial carriage can be acquired, and he be perfectly set up as a soldier. These defects once conquered, none are better calculated for the profession. Hardy, active, patient in wet and cold, and accustomed to indifferent and irregular food, he is admirably adapted to endure the privations and fatigue incident to a soldier's life on active service, and in dash and daring no regiments in the service hold a prouder place than those which appertain to the kingdom of Connaught."

Though there are some men of small stature in the community, there are also some above the middle height, and the majority are of about the middle stature.

Ballycroy being pre-eminently *the* district of County Mayo, inhabited by a colony of Ulster origin, it may not be out of place to repeat here what was written about people of similar origin in the Mullet, that there appears to be no foundation whatever for the statement made originally by an anonymous writer, and quoted repeatedly since by several writers both in this country and abroad, to the effect that the descendants of the dispossessed Ulster tribes, who settled in the counties of Sligo and Mayo, have through inter-marriage and deficient food dwindled to an average height of five feet two inches, and become prognathous, pot-bellied, and utterly degenerate. As before stated, the average stature of the fifty men measured was 1721 mm., or barely under 5 ft. 8 in.; no selection whatever was practised beyond excluding some ungrown young lads; and this average is perhaps a little below the true figure, as it was said by several of the people that most of the best grown men were away working as migratory labourers in England. Only three men whose height was less than five feet three and a half inches were met with, and they seemed to be exceptional cases. Only one dwarf is known in the district.

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<sup>1</sup> This is a matter of opinion, in which I can by no means agree with this author.

## CEPHALIC INDICES, CORRECTED FOR COMPARISON WITH SKULLS.

No.	Index.	A. Corrected Indices.	
4	86.8	} 18	Brachycephalic.
12	85.9		
49	85.9		
48	85.6		
10	85.0		
7	84.5		
3	84.2		
15	84.2		
5	83.9		
45	83.8		
34	83.2		
37	83.0		
32	82.9		
41	82.8		
20	82.5		
16	82.3		
43	82.3		
13	82.0		
39	81.4	} 26	Mesaticephalic.
40	81.4		
8	81.3		
28	81.2		
27	80.9		
31	80.7		
46	80.6		
1	80.6		
2	80.4		
14	80.4		
33	79.8		
36	79.8		
17	79.4		
44	79.4		
24	79.2		
6	79.1		
11	79.0		
23	79.0		
38	78.8		
50	78.0		
22	77.8		
29	77.8		
18	77.6		
47	77.6		
9	77.5		
42	77.0		
35	76.8		
21	76.5		
26	75.0	} 6	Dolichocephalic.
30	75.0		
19	74.3		
24	70.7		

*(B.) Statistics of Hair and Eye Colours:—**ADULTS.—I. Males.*

HAIR.	EYES.			Totals.	Percentage Hair Colours.
	Light.	Medium.	Dark.		
Red, ..	4	1	1	6	3·97
Fair, ..	17	—	—	17	11·25
Brown, ..	42	3	—	45	29·81
Dark, ..	44	17	4	65	43·05
Black, ..	12	2	4	18	11·92
Totals, ..	119	23	9	151	100·00
Percentage Eye Colours, }	78·81	15·23	5·96	100·00	—

Index of Nigrescence, . . . 51·67.

*ADULTS.—II. Females.*

HAIR.	EYES.			Totals.	Percentage Hair Colours.
	Light.	Medium.	Dark.		
Red, ..	3	—	—	3	3·75
Fair, ..	2	—	—	2	2·50
Brown, ..	24	3	—	27	33·75
Dark, ..	32	5	3	40	50·00
Black, ..	1	3	4	8	10·00
Totals, ..	62	11	7	80	100·00
Percentage Eye Colours, }	77·5	13·75	8·75	100·00	—

Index of Nigrescence, . . . 63·75.

Combined Index (both sexes), . 57·71.

CHILDREN.—I. *Boys.*

HAIR.	EYES.			Totals.	Percentage Hair Colours.
	Light. .	Medium.	Dark.		
Red, ..	1	—	—	1	2·86
Fair, ..	3	—	—	3	8·57
Brown, ..	13	1	—	14	40·00
Dark, ..	13	2	—	15	42·86
Black, ..	1	1	—	2	5·72
Totals, ..	31	4	—	35	100·00
Percentage Eye Colours, }	88·58	11·42	—	100·00	—

Index of Nigrescence, . . 42·76.

CHILDREN.—II. *Girls.*

HAIR.	EYES.			Totals.	Percentage Hair Colours.
	Light.	Medium.	Dark.		
Red, ..	1	—	—	1	4·55
Fair, ..	2	—	—	2	9·08
Brown, ..	5	—	—	5	22·73
Dark, ..	8	3	2	13	59·09
Black, ..	—	—	1	1	4·55
Totals, ..	16	3	3	22	100·00
Percentage Eye Colours, }	72·72	13·64	13·64	100·00	—

Index of Nigrescence, . . . . 54·54.

Combined Index (both sexes), . 48·65.



(c.) *Physical Proportions.*—The proportions borne by the main measurements to the stature (taken as 100) are given in this Paper as in its precursors. They are considerably different from those of the inhabitants of the localities previously visited, and especially from those of the people of the neighbouring district of the Mullet, and from the islanders of Inishkea.

#### FACE.

The face, though long in proportion to the stature, is, on the average, shorter comparatively than is the case in Aran, Inishbofin, or the Mullet and Inishkea. The average is 7.29 (canon 6.60), as against 7.61, 7.48, and 7.36, respectively, for the other localities. The extremes noted in Ballycroy are 6.52 and 8.68.

*Upper Face.*—The mean is 4.16, as against 4.42 for Inishbofin, and 4.30 for the Mullet, thus showing the comparative shortness.

*Nose.*—As has been noted previously, this does not bear a very constant proportion to the stature. The extremes are 3.56 and 2.59, and the mean 3.25, or something less than the canon (3.30).

#### SITTING HEIGHT.

The sitting height appears to be somewhat greater proportionally than in the Mullet, &c., as the mean is 53.05, as against 51.33. The extremes were 50.71 and 56.60.

#### UPPER LIMB.

*Span.*—No case of a span-stretch less than the stature was met with here; in fact, in nearly all cases this measurement is proportionately very great. The average for the fifty men measured is 105.75, with extremes of 111.04 and 101.18. As the limbs are not exceptionally long, this shows considerable stoutness of build. The mean for Aran was 101.94 (not much above the Ballycroy minimum); for Inishbofin, 104.95; and for the Mullet, &c., 104.36.

*Hand.*—The hand is decidedly short, the mean being only 11.31, but varying from 10.28 to 12.08: this mean is about the same as that for Inishbofin (11.33).

*Forearm.*—This section of the arm is proportionately long, the mean being 15.30, with extremes of 16.28 and 14.02. The forearm is thus shorter than in the Mullet, and intermediate between it and Inishbofin (15.03) and Aran (15.18).

## (D.) Detailed List of Measurements:—

No.	INDICES.						PROPORTIONS TO STATURE.—HEIGHT = 100.						
	Cephalic.	Height.	Facial.	Bigonial.	Alveolar.	Nasial.	Hand.	Forearm.	Span.	Height Sitting.	Face.	Upper Face.	Nose.
1	80.6	68.1	98.5	78.9	93.7	57.9	11.07	15.28	105.62	51.79	7.50	4.37	3.24
2	80.4	64.9	103.0	80.6	96.8	71.0	11.45	15.87	108.93	51.12	7.49	4.19	3.07
3	84.2	64.2	120.3	91.1	100.0	63.3	10.83	14.56	104.54	52.71	7.16	3.84	2.85
4	86.8	69.2	109.2	90.8	93.8	54.1	11.39	15.80	110.61	51.35	7.33	4.35	3.44
5	83.9	70.4	113.8	84.6	100.0	55.6	11.00	15.62	106.15	50.71	7.69	4.26	3.20
6	79.1	66.3	121.2	92.4	99.0	78.0	11.05	16.02	103.53	52.60	6.52	3.48	2.76
7	84.5	62.9	122.0	103.4	100.0	61.5	11.86	15.54	107.38	53.96	7.14	4.22	3.15
8	81.3	62.5	120.3	91.5	101.0	70.6	12.08	15.24	107.91	53.04	7.02	4.29	3.04
9	77.5	64.9	104.9	88.5	103.3	75.0	11.05	14.97	104.31	56.60	7.16	4.31	3.05
10	85.0	72.0	104.2	76.4	89.4	50.0	10.95	14.66	102.65	52.79	8.68	4.51	3.49
11	79.0	62.6	108.1	86.5	102.2	51.8	11.01	14.80	104.50	52.69	7.34	4.44	3.19
12	85.9	67.7	116.6	91.3	92.4	63.0	11.26	14.94	105.85	51.29	6.99	4.22	3.20
13	82.0	69.4	104.4	87.6	103.2	60.3	10.89	14.80	102.01	51.90	7.45	4.23	3.15
14	80.4	64.8	110.4	82.1	93.0	51.7	11.42	14.53	104.32	51.30	7.94	4.68	3.44
15	84.2	71.3	115.9	90.5	96.8	66.0	11.00	14.75	101.18	54.35	7.41	4.30	3.11
16	82.3	64.1	104.4	85.3	99.0	63.6	11.98	14.46	107.26	55.04	8.02	4.72	3.24
17	79.4	66.5	119.3	98.2	100.0	72.9	11.74	14.52	106.30	54.51	7.05	3.96	2.97
18	77.6	65.5	115.4	92.3	101.9	70.4	11.27	15.28	107.91	52.44	6.94	4.06	2.88
19	74.3	62.4	108.4	91.6	94.9	57.9	11.72	16.15	105.48	51.19	7.45	4.43	3.24
20	82.5	68.0	104.5	90.9	98.0	57.4	11.15	15.41	106.40	54.65	7.67	4.30	3.14
21	76.5	64.2	125.2	99.1	98.0	65.5	11.90	16.25	110.00	53.45	6.84	3.92	3.45
22	77.8	63.9	110.6	89.4	100.0	70.0	10.68	15.72	106.76	51.61	7.29	4.09	3.66
23	79.0	61.0	120.7	90.9	103.2	70.0	11.23	15.17	104.10	52.50	6.79	3.82	2.81
24	79.2	64.4	109.4	84.4	103.1	60.3	11.55	15.34	106.77	52.74	7.47	4.49	3.38
25	70.7	61.6	101.6	89.6	98.9	61.1	10.98	14.95	111.04	55.13	7.57	4.60	3.19
26	75.0	63.5	105.6	86.4	102.2	58.0	11.48	15.80	104.55	52.48	7.35	3.97	2.92
27	80.9	68.6	118.7	94.3	103.2	64.7	11.07	16.07	103.21	54.46	7.32	4.22	3.04
28	81.2	66.0	97.9	75.8	103.1	71.4	11.78	14.89	104.96	50.74	7.91	4.20	3.06
29	77.8	68.2	109.2	83.1	103.0	59.6	11.64	15.69	102.82	54.40	7.35	4.24	2.93
30	75.0	63.9	112.2	91.1	100.0	64.2	11.39	15.13	105.58	55.41	7.08	4.37	3.05
31	80.7	63.5	110.6	86.2	101.1	64.7	10.28	14.94	105.11	53.80	7.00	4.21	2.90
32	82.9	68.4	107.1	86.6	98.9	62.0	11.68	15.57	105.39	54.73	7.61	4.67	3.00
33	79.8	65.7	109.5	83.5	102.0	50.9	11.60	14.66	108.65	52.14	7.34	3.93	3.18
34	83.2	63.9	120.3	96.6	103.2	73.5	12.06	15.12	110.00	52.65	6.94	4.24	2.90
35	76.8	64.6	104.5	83.0	104.1	70.0	11.08	15.34	104.14	54.05	7.76	4.37	2.92
36	79.8	63.6	116.0	90.8	98.9	75.6	11.18	15.22	106.61	51.50	6.97	3.69	2.64
37	83.0	66.0	121.2	95.8	93.3	72.3	11.71	15.51	110.13	54.43	7.47	4.11	2.97
38	78.8	62.2	120.0	91.7	104.5	68.6	11.18	15.43	101.61	—	6.92	3.86	2.94
39	81.4	61.9	117.4	97.5	102.2	62.0	11.63	16.28	105.41	51.74	7.03	4.19	2.91
40	81.4	64.4	108.6	92.2	102.4	67.3	11.58	15.67	107.49	52.92	7.49	4.09	2.86
41	82.8	70.4	120.3	90.7	100.0	75.6	11.05	15.28	103.03	53.63	6.76	3.72	2.59
42	77.0	65.0	115.7	89.3	104.4	61.7	11.19	14.64	106.62	53.54	7.03	3.88	2.75
43	82.3	65.1	115.3	91.2	100.0	65.1	10.95	14.52	106.05	53.03	7.20	4.27	2.82
44	79.4	63.4	118.1	92.9	100.0	56.4	11.42	16.16	110.07	52.40	7.43	4.04	3.22
45	83.8	67.0	110.8	86.6	100.0	62.3	11.55	16.26	106.32	52.76	7.30	4.14	3.05
46	80.6	64.8	117.7	87.1	102.1	64.0	10.57	16.35	102.92	53.53	7.24	4.14	2.92
47	77.6	66.3	111.4	86.9	97.9	61.2	11.12	14.02	103.62	53.37	7.22	4.02	2.90
48	85.6	68.6	123.1	104.2	98.9	63.5	11.64	15.42	104.29	53.28	7.60	3.84	2.94
49	85.9	62.8	118.3	90.0	101.1	66.7	11.30	15.63	104.98	54.04	7.02	4.45	2.98
50	78.0	63.5	109.1	86.0	92.8	56.6	11.01	14.48	102.61	52.94	7.00	4.06	3.07
51	80.5	65.6	112.6	89.4	101.4	63.9	11.31	15.30	105.75	53.05	7.29	4.16	3.25

No.	Name.	Age.	Locality of		Eye Colour.	Hair Colour.	Skin.	Ears.
			Father's people.	Mother's people.				
1	*Conway, Anthony	30	Ballycroy	Ballycroy	blue	fair	ruddy	Outstanding
2	*Cleary, Denis .	30	"	"	dark-grey	dark	ruddy	Flat
3	Keane, Anthony,	24	"	"	blue	brown	ruddy	Outstanding, lobes attached
4	*MacMenamon, John,	45	"	"	blue	brown	ruddy	Flat
5	Lenahan, Patrick,	22	"	"	light-grey	dark	pale	Flat
6	*Cleary, Michael .	38	"	"	dark-grey	black	ruddy	Outstanding, lobes attached
7	*Sweeney, Maners	30	"	"	blue	fair	pale	Outstanding, lobes attached
8	*Campbell, John .	25	"	"	dark-grey	dark	pale	Outstanding, lobes absent
9	*Doran, Hugh, .	—	"	"	blue	fair	pale	Flat, lobes attached
10	*Cleary, John, .	25	"	Newport, Mayo	blue	fair	ruddy	Flat
11	*Keane, Philip, .	41	"	Ballycroy	blue	dark	pale	Flat
12	*Conway, James, .	40	"	"	dark-grey	dark	ruddy	Flat
13	*Cleary, James, .	35	"	Newport	blue	fair	ruddy	Flat
14	*Corrigan, James,	40	"	Ballycroy	dark-grey	dark	pale	Flat
15	*Cleary, Bertie, .	19	"	Newport	dark-grey	dark	pale	Flat
16	*Sweeney, James,	28	"	Ballycroy	green	dark	pale	Flat
17	Tighe, Thomas, .	30	"	"	green	dark	ruddy	Flat
18	*Cleary, Martin, .	35	"	"	blue	black	ruddy	Flat, lobes attached
19	M'Gowan, Roger,	24	"	"	light-grey	dark	ruddy	Flat
20	Conway, Ezra, .	33	"	Sligo	blue	light-brown	ruddy	Flat, lobes attached
21	Ginty, Patrick, .	22	"	Ballycroy	blue	black	ruddy	Flat, lobes very small, & attached
22	*Murray, Patrick,	35	"	"	light-grey	dark	pale	Flat
23	*Kane <sup>1</sup> , John, .	22	"	"	green	brown	ruddy	—
24	*Conway, Michael,	42	"	"	blue	fair	ruddy	Flat
25	Bradley, Daniel, .	45	"	"	dark-grey	dark	ruddy	Outstanding

NOTE.—All those whose names are marked with an asterisk (\*) claimed that

MILIC.	FACIAL.				NASAL.			AURICULAR RADII.			HEIGHT.		FORELIMB.			
	Breadth.	Face length.	Upper Face length.	Breadth.	Bigonial Breadth.	Length.	Breadth.	Internal Bi-ocular breadth.	Vertical.	Nasial.	Alveolar.	Standing.	Sitting.	Span.	Hand.	Forearm.
154	132	77	130	104	57	33	32	130	95	89	1761	912	1860	195	270	
156	134	75	138	108	55	39	30	126	93	90	1790	915	1950	205	284	
160	123	66	148	112	49	31	30	122	91	91	1717	906	1795	186	250	
158	130	77	142	118	61	33	31	126	96	90	1772	910	1960	202	280	
156	130	72	148	110	54	30	32	131	90	90	1690	857	1794	186	264	
155	118	63	143	109	50	39	34	130	97	96	1810	952	1874	200	290	
164	118	70	144	122	52	32	30	122	90	90	1653	892	1775	196	258	
156	118	72	142	108	51	36	34	120	93	94	1680	891	1812	203	256	
148	122	68	128	108	48	36	32	124	90	93	1576	892	1644	174	236	
170	144	80	150	110	62	31	30	144	94	84	1773	936	1820	194	260	
154	124	75	134	106	54	28	28	122	92	90	1689	890	1765	186	250	
170	127	71	148	116	54	34	34	134	92	85	1673	958	1771	199	250	
169	137	78	153	120	58	35	32	143	95	93	1838	954	1875	200	272	
160	134	79	148	110	58	30	34	129	100	93	1687	866	1762	193	245	
170	126	73	146	114	53	35	36	144	95	92	1700	923	1720	187	250	
158	136	80	142	116	55	35	34	123	97	98	1695	933	1818	203	245	
154	114	64	136	112	48	35	32	129	97	97	1618	882	1720	190	245	
160	130	76	150	120	54	38	34	135	104	106	1872	981	2020	212	286	
150	131	78	142	120	57	33	30	126	98	93	1758	910	1912	206	284	
160	132	74	138	120	54	31	32	132	98	96	1720	940	1830	191	264	
156	115	66	144	114	58	38	33	131	99	97	1680	908	1848	200	273	
151	123	69	136	110	50	35	30	124	91	91	1686	870	1800	180	265	
158	121	68	146	110	50	35	34	123	95	98	1780	936	1853	200	270	
160	128	77	140	108	58	35	30	130	96	99	1714	904	1830	198	263	
140	128	74	130	114	54	33	34	122	91	90	1694	934	1881	186	252	

† The families originally came from "the North."

‡ In Irish, O'Cahan.

No.	Name.	Age.	Locality of		Eye Colour.	Hair Colour.	Skin.	Ears.
			Father's people.	Mother's people.				
26	Lenehan, John, .	70	Ballycroy	Ballycroy	light-grey	dark	pale	Outstanding, attached
27	*Murray, James, .	46	"	"	light-grey	dark	pale	Flat
28	*M'Gowan, Bryan, —	"	"	"	dark-grey	black	pale	Flat
29	Bradshaw, Michl.	30	"	"	grey-blue	brown	ruddy	Outstanding, attached
30	*Ginty, Thomas, .	—	"	"	light-grey	dark	ruddy	Outstanding, attached
31	*Conway, Peter, .	22	"	Newport	blue	black	ruddy	Outstanding
32	*Gaughan, John, .	23	"	Ballycroy	light-grey	brown	ruddy	Flat
33	*O'Boyle, Andrew	33	"	"	light-grey	black	ruddy	Outstanding
34	*M'Guire, James, —	"	"	"	grey-blue	brown	ruddy	Outstanding
35	*Lenehan, Patrick,	50	"	"	light-brown	black	dark	Outstanding
36	Gilroy <sup>1</sup> , Michael,	20	"	"	dark-grey	dark	ruddy	Outstanding
37	*Kane, Patrick, .	25	"	Newport	light-grey	fair	ruddy	Outstanding, attached
38	*Conway, Neal, .	58	"	Ballycroy	light-grey	black	pale	Outstanding, attached
39	*M'Gowan, Patrick	—	"	"	light-brown	black	ruddy	Flat
40	*Conway, Patrick,	40	"	"	light-grey	black	ruddy	Flat
41	*Keane, Bernard, .	20	"	"	blue	brown	pale	Outstanding, attached
42	Finn, Edward, .	55	"	"	blue	brown	pale	Flat
43	*Cafferky, Michael	35	"	"	blue	black	pale	Flat, lobes attached
44	*Conway, Michael	35	"	"	blue	fair	ruddy	Flat, lobes attached
45	*Conway, James, .	40	"	"	green	red	ruddy	Flat, lobes attached
46	*Cafferky, Hugh, .	46	"	"	blue	brown	ruddy	Flat, lobes attached
47	*Cafferky, James, .	19 ?	"	"	blue	black	ruddy	Flat, lobes attached
48	*Sweeny, Loughlin	20	"	"	blue	brown	ruddy	Outstanding
49	*Conway, Peter, .	25	"	"	blue	fair	ruddy	Flat
50	*Conway, Hugh, .	19	"	"	green	dark	ruddy	Outstanding

NOTE.—All those whose names are marked with an asterisk (\*) claimed that their families originally

CRANIAL.	FACIAL.					NASAL.			AURICULAR RADII.			HEIGHT.		FORELIMB.		
	Breadth.	Face length.	Upper Face length.	Breadth.	Bigonial Breadth.	Length.	Breadth.	Internal Bi-ocular breadth.	Vertical.	Nasial.	Alveolar.	Standing.	Sitting.	Span.	Hand.	Forearm.
1	144	125	68	132	108	50	29	32	122	93	95	1715	900	1793	197	271
2	152	123	71	146	116	51	33	30	129	93	96	1680	915	1735	186	270
3	160	145	77	142	110	56	40	39	130	97	100	1833	930	1924	216	273
4	154	130	75	142	108	52	31	31	135	99	102	1770	963	1820	206	276
5	156	123	76	138	112	53	34	30	133	99	99	1738	963	1835	198	263
6	155	123	74	136	106	51	33	30	122	94	95	1760	947	1850	181	263
7	160	127	78	136	110	50	31	31	132	90	89	1670	914	1760	195	260
8	158	127	68	139	106	55	28	31	130	98	100	1730	902	1880	201	264
9	168	118	72	142	114	49	36	34	129	95	98	1700	895	1870	205	267
10	152	132	75	138	106	50	35	33	128	98	102	1715	927	1786	190	263
11	158	119	63	138	108	45	34	33	126	95	94	1708	872	1823	191	260
12	156	118	66	143	113	47	34	34	124	90	84	1580	860	1740	185	245
13	152	120	67	144	110	51	35	32	120	88	92	1735	—	1763	194	263
14	158	121	72	142	118	50	31	32	120	91	94	1720	890	1813	200	280
15	158	128	70	139	118	49	33	31	125	82	84	1710	905	1838	197	268
16	154	118	65	142	107	45	34	31	131	92	92	1747	947	1800	193	265
17	154	121	67	140	108	47	29	33	130	90	94	1707	914	1820	191	250
18	158	125	74	144	114	49	32	33	125	96	96	1735	920	1840	190	252
19	154	127	69	150	118	55	31	31	123	97	97	1708	895	1880	195	276
20	160	127	72	140	110	53	33	33	128	93	93	1740	918	1850	201	283
21	158	124	71	146	108	50	32	34	127	96	98	1713	917	1763	181	270
22	152	122	68	136	106	49	30	30	130	97	95	1690	902	1751	188	237
23	166	117	68	144	122	52	33	33	133	89	88	1770	943	1846	206	273
24	166	120	76	142	108	51	34	32	125	92	93	1708	923	1793	193	267
25	156	121	70	132	104	53	30	34	127	97	90	1725	913	1770	190	250

name from "the North."

<sup>1</sup> Mother's name Kane, = in Irish, O'Keon, not O'Cahan.

3. *Vital Statistics (General and Economic) :—*

(A.) *Population.*—The population of Ballycroy has fluctuated a good deal within the last sixty years, but on the whole has not diminished as much as that of more thickly peopled parts of the country. The Table given below shows the population of the district at each census since 1871; also the number of houses inhabited, average number of inhabitants per house, and number of acres per head of the population at each of these periods :—

Census.	Population.	Houses.	Inhabitants. per house.	Acres per head.
1871	2041	346	5.89	25.38
1881	1991	324	6.17	26.06
1891	2036	344	5.92	25.53

This Table shows the great sparsity of the population, about 25 per square mile. Ballycroy is thus probably the most thinly peopled district of its size in Ireland.

The region is subdivided into two districts, North and South Ballycroy, the latter of which is the larger, and the more thinly populated. The distribution of population, inhabited houses, and outbuildings between these two districts in 1891, was as given below :

Locality.	Area.	POPULATION.			Houses.	Outbuildings and Farmsteadings.
		Persons.	Males.	Females.		
N. Ballycroy, .	A. R. P. 20,510 0 10	1191	588	603	197	163
S. Ballycroy, .	31,372 2 18	845	424	421	147	198
Totals, . . .	51,882 2 28	2036	1012	1024	344	361

From this it will be seen that the females slightly exceed the males in number.

In Knight's "Erris" the following are given as results of a census in 1831 (p. 99):—

Houses inhabited, . . . . .	424
Number of families, . . . . .	505
Number of persons, male and female, . . . . .	2925
Number of males, . . . . .	1420
Number of females, . . . . .	1505
Number of males over 20, . . . . .	473
Employed as handicrafts ( <i>sic</i> ), . . . . .	59
Employed in agriculture, &c., . . . . .	817
Farmers of first class, . . . . .	16
Farmers of second class, . . . . .	489

(B.) *Acreage and Rental.*—The total area of the district is 51,882 acres, and the valuation £1937.

The holdings are small, averaging about  $4\frac{1}{2}$  acres under tillage: the whole would average some 15 acres, with a rental of about £5 for the better class, about £3 for the poorer. The tillage land is in many cases held in strips, often by two or more men in partnership. There is but little commonage, as most of the "mountain" or moorland is in the landlord's hands, and let out for grazing. In 1891 there were 76 holdings of between £4 and £10 valuation, 289 of £2 and under £4, and 96 of under £2.

Formerly in Ballycroy, as in the rest of Erris, the land was held by communities, under a head man or king, who parcelled out the collops, or holdings, by lot every third year, as described by Mr. Knight, and quoted in last year's Report. This system has ceased to exist for many years, and the holdings are now mostly held at judicial rents.

(c.) *Language and Education—Language.*—The people may be said to be practically bilingual, as most of them speak both Irish and English. A number of older people speak Irish only, but they are rapidly becoming fewer. The dialect they speak is somewhat different from that of the other peoples of Erris, though not so much so as formerly, and has most of the characters of Ulster Irish. The exact proportion of those speaking Irish only, and Irish and English, was not ascertainable, as the census only gives language returns by baronies. In 1891 the barony of Erris, with a population of 16,504, had 726 who spoke Irish only, 5394 Irish and English.

*Education.*—There is a very considerable proportion of illiteracy in the district; but here again I am unable to give the exact amount, as the returns on this subject are made by parishes, and Ballycroy



forms only a part of the parish of Kilcommon, as all Erris outside of the Mullet is designated. In 1891 the condition as regards education of this very large parish was as given in the Table :—

	Persons.	Male.	Female.
Number above 5 years,	10,988	5310	5688
Illiterate, . . .	5382	2266	3116
Percentage, . . .	48·9	42·7	54·8

The chief reason for the high rate of illiteracy prevailing in Ballycroy seems to be the scattered nature of the population, and the long distances of many of the houses from any of the schools, of which there are three in the district.

(D.) *Health*.—The following notes regarding the health of the people were obtained, for most of which I have to return my best thanks to Dr. P. M'Hale, of Ballycroy, who kindly afforded me the opportunity of seeing many of the cases personally, and also allowed me access to notes of cases. On the whole, the population is a healthy one, and there is but little serious disease, though there are many trivial ailments, for the most part attributable to the nature of their food and dwellings, and of their occupations.

*Consanguineous Marriages*.—Marriages between relatives are of pretty common occurrence in this district, for several reasons; one of these is the strong clannish feeling of the people, another the nature of their relations with the inhabitants of the surrounding districts; and, lastly, the difficulties of communication which prevent much movement of the population. These unions are not commonly of nearer degree than second cousins, which seems to be the most usual relationship in these cases. In addition to these there are many, if not the majority, of the marriages in which the parties are related more or less distantly to one another, often in no very distinguishable degree.

The kindness of the Rev. Henry Hewson, P.R., of Belmullet, who supplied me with the list of marriages and of dispensations for marriage on account of relationship from the year 1875, extracted from the record of dispensations for the diocese which he has kept since that year, enables me to give actual figures. In the Roman Catholic parish of Ballycroy,<sup>1</sup> which contains about 320 families, there

<sup>1</sup> It is not a parish in the Census Returns, but forms part of Kilcommon, Erris.

were in that period 147 marriages altogether, and of these 50, or 34 per cent., were consanguineous.<sup>1</sup> This long-continued intermarriage does not appear to have produced any of the degenerative effects ascribed to it by M. Devay and others. As before stated, the people are well grown and healthy as a rule, and the proportion of serious disease, especially congenital, is but small. The people themselves do not appear to attribute any evil effects to this purity of strain. Its only effect seems to be, as noted in other districts, the strong personal resemblance among many of the people of the district which must at once be noticeable to a stranger arriving among them.

*Diseases.*—The following, as far as could be ascertained, is the state of the population as regards disease. Figures are given wherever they can be accurately known. The principal diseases may be classed as follows :—

*Insanity* is said to be very rare in the district, but the actual number of cases could not be obtained.

*Idiocy and Imbecility.*—There are no idiots properly so-called, but there are two, or at most three,<sup>2</sup> individuals who are said to be “weak minded,” though shrewd enough in most things where their own interest is concerned.

*Epilepsy.*—Several cases are known to exist, but as these do not usually seek professional aid, the actual number is not ascertainable.

*Deaf-mutism and Deafness.*—There is one deaf mute (a female): parents so far as could be learned not relatives. There are also two cases of deafness consequent on acute diseases.

*Blindness.*—There is no congenital blindness, but several old people are blind either from cataract or as the result of injuries.

*Malformations.*—Congenital malformations are very rare. There is a case of hare-lip in one family, parents not relatives.

*Herniæ.*—Three cases have been noted within recent years.

*Albinism.*—There are four albinos in one family; the father is dark-haired, the mother red-haired, they are not in any way related so far as they know.

*Fevers.*—No information obtained.

“*Constitutional*” *Diseases.*—Phthisis and struma are not at all uncommon. It is also noticeable that many of the young girls are

<sup>1</sup> The total number of marriages for the whole barony of Erris in the same time was 1210, and of these 265 were between relatives of a degree requiring dispensations, a percentage of 21·9.

<sup>2</sup> Here my informants differ.

anæmic in spite of the open-air life they lead (*query*, is this due to the almost exclusively vegetable dietary?).

No information was obtainable respecting malignant disease. The cases probably fall into the hands of "wise" men or women, or into those of cancer-curers such as practise in the Mullet district.

Rheumatism seems to be very common, especially in the old.

Tonsillitis, too, is not unfrequently seen.

Hysteria is by no means unknown.

*Dietetic diseases.*—Owing to the nature of the food, dyspepsia is very prevalent, and the increasing use or abuse of very strong tea at all meals seems to deserve a large part of the blame which is ascribed to it by some of the older people.

Ento-parasites are said to be of common occurrence.

*Respiratory diseases.*—Bronchitis is very common in the winter and spring months, especially among the older people.

*Local affections* are, as was noted in the Mullet, few, and usually of but little importance. Several cases of ophthalmia, and some of senile cataract, also one of "Jacob's" ulcer have been noted of late.

The teeth are usually short, broad, even, and white; but dental troubles are by no means uncommon.

*Female troubles* seem to be very prevalent. The one most often noted was menorrhagia.

*Venereal diseases.*—As is the case commonly in Irish rural districts, venereal complaints may be said to be practically non-existent.

*Skin.*—A number of skin diseases come for treatment, the principal of which are eczema, impetigo, scabies, and tinea tonsurans.

*Accidental injuries* are of frequent occurrence, amongst the most common of which are cuts and contused wounds, fractures, and burns.

(E.) *Longevity.*—Though there are no centenarians now in Ballycroy, yet there are two persons living who are over ninety years of age, still hale and hearty, and a good many cases of people over eighty years of age.

4. *Psychology.*—A sketch of the mental character of the people, as well as the physical, is necessary to the completeness of a report such as this, and accordingly inquiries were made on this point of people of all classes and conditions who have daily dealings with them, as well as such observations as could be made personally during a stay among them of limited duration, and the result is, on the whole, very creditable to the community at large. As is the case with most such communities as this, isolated by reason of origin and customs, the people of the other parts of the barony seem to look upon the inhabi-

tants of Ballycroy with a good deal of distrust, and many tales are told to their disfavour, for which the usual allowance must be made. Trustworthy informants, however, seem to agree in the statements following:—The people of Ballycroy are reputedly sharp and shrewd in matters of business; they are good judges of character in their customers, and can readily adapt themselves to their peculiarities, and, their neighbours assert, are not over-scrupulous about taking any advantage which offers. As a rule, however, creditable informants state they are very honest in their dealings with one another.

They are fond of amusement, especially music and dancing, and show more signs of artistic taste than were observed in any district yet reported on, though their choice in colours may not be always classically correct. They are sharp at repartee, and a good deal given to joking, often of a very practical nature. Formerly this district was noted, like the other parts of Erris, for the litigious character of its people, but this spirit has largely died out. The faction fights which used to occur between the peoples of North and South Ballycroy are a thing of the past, though some few remaining signs of the old feeling on this point were noticed. The Ballycroy people used formerly to be noted for their quarrelsome nature, which is almost proverbial in the other parts of Erris; but this no longer characterises them to the same extent, a change which is said to be in part at least due to the almost complete suppression of illicit distillation in the district. When quarrels occur the men seldom go the length of a stand-up fight, man to man, but make use of abusive language, and throw stones, or several will set on one. They are not, as a rule, given to drink, and in their everyday life are sober and quiet, but on fair days, or at races or other public occasions, a good deal of drinking takes place. When in liquor they are very boastful, and the local pride, which is evident in them at all times, shows out more strongly. Most of them seem to look upon themselves as far superior to all the neighbouring peoples. This pride, by cultivating a sense of self-respect, seems, in some cases, to be the moving spring of a manly and independent spirit which is exhibited by many. In connection with this, one curious feeling may be noted. It was some years ago considered to be an indelible disgrace to any Ballycroy woman to sell butter.

To strangers the people are obliging and kindly, ready to afford information, and extremely hospitable. To one another they are generous, especially in times of trouble or adversity, when, even though in straitened circumstances themselves, they are ready to help those worse off.

The moral character of the people is very good, as illegitimacy, though not unknown, is of very rare occurrence. There is practically no crime in the district, and it is a long time since any serious offence was committed there. They are said to be devout in their religious observance.

This section may be concluded by quoting the accounts given of the people by writers on the district. Mr. Knight's description,<sup>1</sup> written sixty years ago, is practically accurate as applied to the people at the present day. He says that they are "bold, daring, and intrepid in danger; not good-tempered, but hospitable to an extreme. A stranger seldom enters their country without having the usual salute of 'you are welcome to the country, stranger,' given him, be he known or not. They are considered generally very intelligent, and having that degree of cleverness and acuteness, particularly in bargaining, said to be peculiar to their northern origin. They are the material of a fine people, if properly managed."

With this account, that given by the novelist Maxwell (long a resident in the district) closely tallies. Writing a little earlier in the century he says<sup>2</sup>:—

"The inhabitants of this district are extremely hospitable to passing travellers, but by no means fond of encouraging strangers to sojourn permanently among them. This latter inherent prejudice may arise from *clannish* feelings, or ancient recollections of how much their ancestors were spoliated by former settlers, who, by artifice and the strong hand, managed to possess the better portions of the country. They are also absurdly curious, and will press their questions with American pertinacity, until, if possible, the name, rank, and occasion of his visit, is fully and faithfully detailed by the persecuted traveller.

"On the score of propriety of conduct, I would assign the female peasantry of this district a high place. When the habits of the country are considered, one would be inclined to suspect that excessive drinking, and the frequent scenes of nocturnal festivities which wakes and dances present, would naturally lead to much immorality. This, however, is not the case: broken vows will, no doubt, occasionally require the interference of the magistrate or the priest; but generally the lover makes the only reparation in his power, and deceived females or deserted children are seldom seen in Erris."

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<sup>1</sup> Erris, p. 106.

<sup>2</sup> "Wild Sports of the West," Chap. XLVII.

5. *Folk-names.*—The following list of the surnames of the district was obtained. It contains all the surnames now in Ballycroy, with the exception of a few families recently settled in the region :—

Surname.	Number of Families.	Surname.	Number of Families.
Bradley, .. ..	2	Kane, or Keane, ..	16
Bradshaw, .. ..	3	Kilroy, .. ..	2
Cafferky, .. ..	25	Little, <sup>1</sup> .. ..	1
Cadden, .. ..	1	Lenahan, .. ..	20
Calvey, .. ..	8	Loftus, .. ..	1
Campbell, .. ..	7	M'Ginty, or Ginty,	14
Carey, .. ..	1	M'Gowan, .. ..	5
Cleary, .. ..	1	M'Guire, .. ..	4
Cooney, .. ..	2	M'Greal, .. ..	1
Conway, .. ..	31	M'Hugh, .. ..	2
Cormack, .. ..	3	M'Manamon, .. ..	16
Corrigan, .. ..	15	M'Neely, .. ..	6
Deane, .. ..	2	M'Tighe, .. ..	3
Dooher, .. ..	4	Malley, .. ..	2
Doran, .. ..	6	Masterson, .. ..	1
Dyra, <sup>1</sup> .. ..	1	Molloy, .. ..	3
Fallon, .. ..	1	Monaghan, .. ..	1
Finn, .. ..	2	Moran, .. ..	3
Gallagher, .. ..	5	Murray, .. ..	9
Gaughan, .. ..	2	O'Donnell, .. ..	8
Grealis, <sup>2</sup> .. ..	1	O'Hara, .. ..	1
Gruddy, .. ..	1	O'Boyle, .. ..	5
Henry, .. ..	2	Sweeny, .. ..	25
		Togher, .. ..	4

Some of the less numerous of these surnames are comparatively recent importations from the surrounding districts. Some names once common in the district have now died out. One of these was Lynott, one of the old Anglo-Norman names.

The families whose ancestors came "from the North" take great pride out of it, and rather look down upon those who are the descendants of the aboriginal inhabitants.

#### IV.—SOCIOLOGY.

1. *Occupations.*—Though the district is maritime, the population is almost a purely pastoral one, sea-fishing not being practised as a mode of livelihood by any considerable portion of the people. The majority of the farms are of very small size, averaging about 4 to 4½ acres for the poorer class, 15 acres for the better off, under tillage,

<sup>1</sup> Not native.

<sup>2</sup> From Inishbiggle.

but usually having a large mountain run, over which the tenant has grazing rights. The average rent for a holding of the better class would be about £5, £3 for the poorer. As in the Mullet, the land is not usually well fenced. The principal crops are potatoes, barley, and rye. Spade labour is almost universal. Sea-weed is the principal manure. A plot of land is cropped until worn out; then a fresh piece is reclaimed and fenced, and so on. During the summer months the cattle were formerly moved to the mountain runs; some of the younger people going off to tend them there, and living, while thus engaged, in roughly-built huts called boothies. This custom was still in vogue until about thirty years ago.

Many of the men—my informants stated the number at about 130—annually go to England or Scotland every summer to work as migratory labourers, returning to their homes for the winter months.

Along the coast-line a good deal of kelp is made, on which no royalty is paid. The sea-weed for this purpose is sometimes brought by boat to points where it is to be burned, but Knight mentions a method of conveying it common in his time, and still practised. A description of it is best given in his own words: "Transporting sea-weed from one part of these sheltered shores to another, either for burning into kelp or for manure, in large masses, without any other means than a man standing on the heap, and pushing it forward with a long pole, is a very common practice, and hundreds of these may be seen floating with the tide up and down the sound of Achill, or on the Ballycrov shores, in the fine summer days; while a single man sits quietly on the heap, roasting his potatoes and limpets, or other shell-fish, for his evening meal, carried forward towards his destination without any trouble or exertion from him until the tide slackens, or that he is obliged to pole it forwards in some parts against the current."

As before stated, there is practically no sea-fishing; a few coal-fish

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<sup>1</sup> I am indebted to my friend Mr. G. H. Kinahan for the following note on the cutting and transportation of sea-weed:—"During springs the weed-cutters must be on the claddagh (the foreshore left dry during low water) when the tide is one-third gone; the men with hooks cut the weed, while the boys and girls pile it in heaps like hay-cocks; these heaps must be properly built to give them solidity. As the tide comes in, the men come back and put a *suggaun*, made of sea-weed, round the butt of each heap, or two *suggauns*, one above the other, if there is a rough sea. If the sea is rough, they often fasten a rope to the heap, and tow it into shelter as the tide rises. If there is a quiet sea, a man will sit on the heap, and, as it rises, will direct it with a pole to wherever he wants it to go; he will even go out into the tidal race, and run with it to the place he wants to land the weeds, generally some harbour or coose where it can be easily landed, and carried to the land."

are taken occasionally ; periwinkles are gathered in large quantities on the sea-shore, and large lobsters are sometimes found among the crevices in the rocks. About forty men are employed netting salmon in the chief river of the district. There is not much regular employment for labourers, for whom the average rate of pay is about 9s. a-week. Tradesmen are few ; there are four hand-loom weavers, and two blacksmiths. During the winter months there is little work of any sort done.

Like the Mullet district, Ballycroy exports very large quantities of eggs, most of which are sent to Westport and thence to the English market. Eggs are said to be occasionally used for barter. The women, besides the ordinary domestic duties, carding, spinning, &c., take part in all field labour with the men, and gather sea-weed for manure ; the only kind of outdoor work they do not engage in is cutting turf, which is the main fuel of the district. Some of the turf is exported to Inishkea and the lower extremity of the Mullet.

2. *Family Life and Customs.*—The family life of the people of Ballycroy is on the whole very similar to that of the people of the other parts of Erris and of the natives of Inishbofin, and so need not be described at any length, the reader being referred for details to the previous report.

The children of a family are sent to school young, if at all, but their attendance is stated to be rather irregular, owing to the long distances the children have to go and the wild nature of the country. They leave school young, and then enter into the ordinary work of the family.

The people do not as a rule marry as early as those of some other parts of the country, many girls not getting married until 25 years of age. Business and family interests have usually more to do with the matches than romantic attachment, the matter being arranged as a rule by the parents beforehand. After all has been settled, the young man goes, taking with him a spokesman to explain his errand, and a bottle or two of whiskey, and the girl's consent is asked ; if this be given, the parents then arrange about the dowry, and at this stage the match may be broken off if satisfactory terms be not arrived at. A calf or a pig may be the cause of upsetting the arrangement. Weddings are occasions of great feasting and merriment, and usually are concluded by a dance. Straw boys (*clommeraghs*) go round to these dances as described in the report on the Mullet. It is not considered etiquette in Ballycroy that these strawboys should take any drink at a wedding. The taking of the bride to her husband's house



is another occasion of festivity, though not now of so uproarious a nature as it was in the earlier part of this century, when it was thus described by a writer who was long resident in the district:—  
“‘Dragging home’ is the bringing the bride to her husband’s house. An immense mob of relatives and *clevines* of ‘both the houses’ are collected on the occasion, and as an awful quantity of whiskey must of necessity be distributed to the company, this high solemnity seldom concludes without subjecting the host’s person and property to demolition.”

The ceremonies and observances relating to deaths are very fully kept up. Wakes are still held, but only in the case of old people, the young not being waked. Most of the old games and observances are still kept up, but it is very difficult to obtain information respecting them. The corpse is lifted on to the bier at the house, and off it at the graveyard, by the relatives on the male side of the family at one side, and by those of the female side at the other. It is considered unlucky for the party whose side of the bier touches the ground first. The coffin is always taken to the graveyard by the longest route. On reaching the cemetery the coffin is carried to the place where it is to be interred, and then the people all scatter to kneel and pray at the graves of their own relatives. After this, new pipes and tobacco are served out to those present, who sit down and smoke.<sup>1</sup> After the pipes have been smoked, the weeds are cleared away and the grave is dug. It may be worthy of remark here that a grave is not dug on a Monday if possible, and if for any reason a burial has to be made on that day, a sod is raised the day before. After the grave has been dug and the coffin lowered into it, a band of women gather round it and sing the *caoine*, which here has not degenerated into mere discordant wailing, as it has in some other places, but is often really very musical and plaintive. When this has been done, the mourners are sprinkled with holy water and then engage in prayer; after which the grave is filled in, covered over with rough stones, often white in colour, and the unused pipes placed upon it. Until the prayer is over, it is considered both bad taste and extremely unlucky to leave the graveyard. To stumble in a cemetery is believed to indicate that the person who does so will die within the month.

Unbaptised or still-born infants are buried at night in separate burying grounds, by themselves. One of these infant cemeteries is at Bunmore.

<sup>1</sup> In some cases it is said that a small turf fire is lighted at which the smokers light their pipes, but I have not seen this personally in this district.

One social function, going for the sand-eels, ought not to pass without mention; it is the cause of considerable gatherings of the young people on the sea-shore on moonlight nights, the object being as much the amusement as the sand-eels themselves. The mode of taking these latter is by passing a blunted reaping-hook or a knife through the sand.

3. *Food*.—The dietary of the bulk of the people is almost exclusively vegetarian. As a rule it consists of potatoes, boxty (or potato-bread), flour-bread, and, to some extent, eggs and milk. A great deal of imported meal and flour is consumed, and tea is now used at nearly every meal, which, as it is made very strong, and drunk in large quantities, is probably responsible for a very large part of the digestive trouble so common among the people. A good deal of Indian-meal stirabout is taken during the summer months.

Fish, when used, is obtained from Newport or Achill.

The people usually take three meals in the day.

4. *Clothing*.—The population, as a whole, seems to be well and comfortably clad on public occasions, though many of the poorer people are rather ragged in working attire. The clothing is very largely imported, and quite modern in style; but a good deal of greyish-coloured and other home-spun is still worn, some of which is of a very high class. The dress worn by the women on working days is still of the old style, a short petticoat of a very bright red, dyed with madder or an aniline dye, a dark bodice, and a small tartan shawl over the shoulders, and a red handkerchief tied under the chin covers the hair. The old-fashioned heavy cloak of dark blue cloth is worn when at work away from home. Of late it has become a common practice among some of the better-to-do farmers to send the wool of their own sheep to the woollen mills at Foxford or to Scotland to be made up for them. A good deal of home-made flannel is worn in shirts, and the blankets too are of local manufacture. The wool for the homespuns is oiled, corded, and spun by the women, and then sent to one of the weavers. The regular charge made by these weavers is threepence a yard for frieze or flannel, fourpence per yard for blanketing.

Some of the old dyes are still made use of. A yellow is obtained, as in Bofin, from a lichen (*Ramalina scopulorum* ?) which they gather from the rocks; a greenish colour is got from the tops of the heather, also a black from some other plant, no specimen of which could be obtained.

The men wear boots as part of their everyday attire, but the women and children usually go barefooted, wearing boots only on Sundays and other public occasions.

5. *Dwellings*.—The houses in this district are, as a rule, of a superior class to those to be seen in the northern portion of Erris. They are usually solidly built of stone and mortar, and whitewashed outside; but few either of the dry-stone or of the "sod houses" now exist, though a few, some of which were evidently not long built, were seen. A typical Ballycroy house is built of stone and mortar, and thatched with straw or bent, laid on over "scraws" of grass turf, and held in place by *sougans* (straw ropes), which are attached to stout pegs driven into the walls, instead of stones or beams as seen in the Mullet. The house consists of a room and a kitchen. The kitchen is a large apartment, entered by two doors, one in front, the other in the rear, opposite to one another; the floor is flagged, or of beaten clay. At one end of this room is the fireplace, a large open hearth, with a wide chimney. Beside the fire, at one side, is a bed of the usual Erris type. At the other end of the kitchen is a place for the cattle, usually paved, and provided with a small channel in the floor, which runs out under the gable. Over this part of the kitchen is a half loft, in which are kept agricultural implements, &c., and there is usually a small square hole or window in the gable of this end, which affords ventilation and some light. Across the apartment stretches a straw rope, on which articles of clothing are hung to dry. The walls are whitewashed inside, and are often decorated with cheap pictures, usually religious in character. The furniture of the kitchen consists of the bed before mentioned, a table, a dresser, with some cheap crockery ware, a large chest, a settle or form, and two or three chairs or stools. The kitchen utensils are the usual three-legged pot, a skillet, a griddle, a few wooden piggins, a bucket, a boran or sheepskin sieve, a wool-wheel, and some cards.

Cheap lamps of modern form are in most houses, but in some the rude "flare," described in the report on the Mullet, is still in use.

The "room" is a smaller apartment, and usually contains two or more beds, of the usual Erris pattern, and with feather ticks; it contains a table and a couple of chairs. The floor is often boarded.

6. *Transport*.—The means of transport are, with the exception of the method of conveying seaweed mentioned in another section, the same as those prevailing in the Mullet district. There are comparatively few carts in use, and turf, manure, and articles for market are usually carried in the pardoges or panniers on the backs of donkeys

or horses. The better-to-do among the people possess saddle-horses, and, as distances are long, and houses far apart, live a good deal on horseback. As in the other part of Erris, it is common for two to ride on one horse, the man in the saddle, and a woman *en croupe*. For short distances and domestic purposes panniers, carried on the back, are used, chiefly by the women.

For transport by sea a good many boats (about seventy) are kept along the coast (mostly row-boats). As before mentioned, the people do not fish as a means of livelihood, so the boats are not employed except for transport. A good deal of turf for fuel is sent by boat from Ballycroy to the lower extremity of the peninsula of the Mullet.

In the early part of this century, when Mr. Maxwell wrote, there was "no road on which a wheel could turn" in the district, and, as a consequence, no wheeled vehicles. The main road was constructed about 1841, and others since. Need has long been felt for a direct road to Belmullet, and one is now being constructed by the Government which will certainly prove of great benefit to the people. The smaller roads are very indifferent, and mostly used only for foot-traffic, and ponies carrying panniers.

#### V.—FOLK LORE.

Though Ballycroy is reputedly very rich in its traditional lore, but little information could be obtained on the subject, as the people are very reticent with strangers about such matters. The following notes, however, were obtained:—Many ancient songs and traditional tales in Irish are still preserved among the older people, and repeated around the firesides in the long winter evenings; but the old beliefs seem to be losing their hold on many of the younger portion of the population. The principal legends of the region have been recorded by Mr. Maxwell in a somewhat popularised form.

For the following notes I am chiefly indebted to the kindness of Messrs. James, John, and Robert Cleary, of Ballycroy, and Mr. John M'Manamon. Some other informants have requested that their names should not be mentioned.

1. *Customs and Beliefs*.—As remarked in the other localities reported on, the number of actions or events considered of lucky or unlucky import is very large. It is unlucky to meet a red-headed woman on starting out in the morning on any business, especially if fishing or shooting be the object in view. Some object to meeting any woman as the first individual encountered on the road in the

morning, and people have been known to desist from the projected undertaking on this account. It is also unlucky to have a hare cross one's path, but not so much so as the meeting of a red-headed person.

Ill fortune also follows the digging of a grave on a Monday, the change of residence on that day, the removal of one of the pipes off a grave, giving fire out of the house on May Day, and the molesting of the wild swans which visit the coast in winter. To stumble or fall in a graveyard is looked upon as a sign that the person so doing will die within the month. The death-warnings mentioned in the report on the Mullet are also believed in here, as is the evil eye; the consequences of which may be averted in the manner mentioned therein (*l. c.* 631). It is considered by some to be very unlucky to rescue a drowning man, as he will be certain to do some evil to his rescuer. The old belief that blood will start from the body of a murdered person at the touch of the murderer, is still prevalent. Fairies are believed in by many, and many tales of their actions are related. They are believed to be a class of fallen angels who took part with Satan to some extent, but whose guilt was not sufficient to condemn them to the infernal regions, and were, instead, made to wander through the universe. Michael Conway, who has a local reputation for his knowledge of their ways, says that they are of three classes—the first were made dwellers in the air; the second, in the sea; and the third, on the earth. They are accused of doing much mischief, both to men and to domestic animals. Cattle becoming suddenly ill are said to be "shot" by them, and the "cure" applied by a wise man who possesses a fairy stone (arrowhead) is the passing of the said flint arrowhead over the back and under the belly of the animal thrice, accompanying the action by suitable incantations.

Changelings are believed in, and tales are told of cases of this nature. Quite recently the fairies were supposed to have stolen away a child, and carried him to a distance of three miles. Michael Conway states that he knew a man who, when out one night, heard sweet music of pipes, and in an ecstasy he danced to the music; he died within the year.

The people do not meddle with an old rath or fort, even though in the centre of cultivated land, as they believe these to be favourite dwelling-places for the fairies. A man built an addition to his house upon a "fairy hill": he died within the year (was drowned), and later on his brother also died. A hearth should always be swept clean, and new fire put down when going to bed for the fairies to warm themselves at.

The devil, as usual, bulks largely in the local tales; he is said to

have appeared to one woman in chapel! Satan explained to her that he went to the church because people were so thoughtless there, and the women went there mostly to criticise each other's clothes. Demoniacal possession is believed in, and a tale is told of a possessed man near Mount Jubilee, between Belmullet and Ballycroy.

Considering the wild nature of the country, it is not wonderful that ghosts should be met with, and phantoms of various kinds. The people used to dread passing a spot on the main road after dark, as the ghosts of people slain in faction fights there (it being on the boundary between north and south Ballycroy) were believed to appear there, and to haunt especially the families of the slayers. The ghost of a sportsman, who many years ago met his death on the mountains, is said to be sometimes seen.

On the road between Ballycroy and Bangor, Erris, a phantom dog sometimes appears, as does a white cow, whose appearance is looked on as a death-warning. Several of the lakes are thought to be inhabited by "water horses," which sometimes come on land and endeavour to coax unwary people to mount them, and then, having got them mounted, carry them off into the water. They are believed to be seen once in every seven years.

Among the customs observed may be mentioned wakes, at which all the old games are kept up. These wakes are now only held on old people, not on younger ones.

The funeral observances have been described in another section. A straw cross is placed in the roof of some of the houses on All Hallows' Eve to avert evil. Fires are lighted on St. John's Eve (June 24), as described in last year's report.

At one time the most inviolable oath taken in this district was that sworn with the hand on a skull; this is still believed in, but never practised now.

Straw boys (clommeraghs) go round to weddings, and dance with the bride as in the Mullet.

Practically no information could be obtained as to the leechcraft, or folk-medicine, of the district. Several "wise" men and women practise in it, but they keep their remedies secret as far as possible. Head-measuring, the application of various unguents and charms for the rose (erysipelas), and the use of charms for toothache, as described in the other part of the barony, were all that any information could be obtained about. Many local herb remedies are said to be in use, but beyond this vague statement no further information could be got. The only treatments of interest in the diseases of cattle,

of which any description could be got, were the treatment of fairy-“shot” animals described above, and the tying of the “worm-knot” with the object of destroying entoparasites.

2. *Legends and Traditions*.—As has been already stated, there are a good many local traditions, mostly of a minor character; but, owing to the reticence of the people on this subject, only a few could be obtained, the chief of which have been recorded by Mr. Maxwell. The “Legend of Knock-a-Thample” is still told practically as given in his well-known work, “The Wild Sports of the West,” and the grave of the “Red Pedlar” pointed out. Tales are told of a daring robber who, in past times, lived in a cave in the mountains, and who was at last hunted down and killed. Lough Curafin, in the mountains, is said by the country people to owe its origin to the massacre of a priest and his people (in the time of Cromwell, they say) on the spot where the lake now is; the ground sank down and the water covered it, thus forming the lough. The water is dark-coloured, and the people say that waves are on it even on the calmest days when there is no wind; they also say that the fish in it will never take a fly. Strange to say, though such a conspicuous character as Grace O'Malley held the Castle of Doona, and lived for some years there, local tradition is almost dumb about her; the story of a fight in the courtyard, where the O'Malleys captured the castle from the M'Mahons, seems to be almost the only trace of her memory which is preserved here; while a few miles off, in Achill, there are many legends about her. This is probably due to the ancestors of the present population supplanting the aborigines.

## VI.—ARCHÆOLOGY.

This district contains much that is interesting to the archæologist, but, as in former reports of this nature, all that can be done here is to indicate what is worthy of notice to those who make Irish antiquities their study.

1. *Survivals*.—Owing to the greater comfort of the people, these are fewer than in the northern part of the barony. Querns are no longer in use, though they were until quite recently; the type of wool-wheel, the sheep-skin sieve, panniers on the horses' backs, and the use of hooped piggins are the chief amongst the remaining articles not yet deposed by our modern appliances. The clothing has been before referred to. One article still in use is worthy of notice, the otter, an implement of very ancient origin in Ireland, is used sometimes for fishing in the fresh-water lakes.

2. *Antiquities*.—There are not many ancient buildings or monuments in Ballycroy, which must always have been a thinly-populated district, and of those that exist, all, or nearly all, are of far earlier date than the Ulster colony. The remains still in existence are in much the same condition as when O'Donovan noted them in 1838; the people generally respect these old monuments, and so the only destroyer in the meantime has been the weather.

The object of this section is to point out the objects worthy of note to archæologists, not to enter upon a description at length, which is left to more competent hands, and so only a short notice is given here. The most ancient remains seem to be a cromleach near Claggan, a "druidical circle" at Tallagh, and numerous small earthen forts scattered through the district. At a place called Kildun (*Cill-a-dhuin*), where a peninsula juts out into the bay, is an ancient burying-ground, and an upright monumental stone or slab inscribed with a cross within a circle. The other buildings and monuments are apparently of more modern date; they comprise churches, holy wells, two castles, and a monument. At Bunmore there is the ruin of *Tempull Enna* (St. Enda's Church), a small ancient building of which, as in O'Donovan's time, there is but little standing; not far from the church is *Tobar Enna* (St. Enda's Well),<sup>1</sup> which is covered by a beehive-shaped structure of stone, on the front of which is a slab rudely marked with a cross. The church and well are the scene of the "Legend of Knock-a-Thamle," which has been already referred to in this paper. Not far from the well is what is pointed out as "the Red Pedlar's Grave," in which the murderer is said to be interred. At Claggan, in the south of the district, outside of the graveyard, is, or was, *Teach Fiontainne* (the house of St. Fintanny), the site of a small church. O'Donovan says that "St. Fintanny was the author of the Pagan History of Ireland, and is said by tradition to have lived longer than Methusalem (*sic*), and to have been contemporary with the very old woman called Cailleach Bheartha." Inside the graveyard is the Well of St. Fintanny, where stations are performed. Just outside this graveyard is a small rocking-stone.

At Castlehill (*Knock-a-chaislean*) there are the foundations of a castle torn down for building materials some time in the last century;

<sup>1</sup> Some call this well St. Catherine's; it is believed by the people to possess anti-Malthusian properties; also, to be efficacious in curing eye troubles, abscesses, and dog-bites. Stations are performed here.

At Bunmore there is also a *killeen*, or ancient burial-place.



of the founder or possessors of this castle local tradition is altogether silent—no one knows who they were.

The best known of the ruins of this district is the Castle of Doona (*Dun atha*), of which many contradictory traditions are in existence. Some ascribe its origin to the famous Grace O'Malley, who is said to have spent some of her life there; others assert that she captured it from the MacMahons. O'Donovan, whose informant was a Mr. Cormic, whose family was of old standing in Erris, says that it was built by Brian Revagh O'Kelly, who was married to one of the Barrets, and flourished here in the reign of Elizabeth; another account again states that it was built in the time of *Domhnall Duall bwee*, a Damnonian chief who lived before the time of Christ. If there was ever a dun here it seems to have been entirely removed. The castle is built of rough rubble stones, and the walls are very thick; but the greater part of it is in a very ruinous condition. The main tower was split in two many years ago by the accidental firing of a turf stack in its interior; one half fell, the other is still standing. The court-yard and passage to the landing still remain. Part of the castle has been transformed into a modern farmhouse and offices.

Not far from the castle is Doona Church, a building about six centuries old; it is about 50 feet in length, by some 20 in breadth. It was somewhat modified in form about two centuries ago, when certain additions were made to it. The interior is used as a burial-place, and is choked up with graves which have raised the soil far above the original floor level.<sup>1</sup>

The most modern of all the monuments of Ballycroy is *Lachta Dahya Ban* (Fair David's Bed), a monument on the top of Corslieve Mountain, between Ballycroy and Tirawley. "Fair David" was a notorious robber chief who lived in a cave in the mountains, and was a scourge far and wide; he was hunted down and killed at this spot about two centuries ago.

## VII.—HISTORY.

The earlier history of the district is the same as that of the rest of Erris, which has been given at length in the Report on the Mullet, Inishkea, and Portacloy, and so will only receive a brief notice here.

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<sup>1</sup> O'Donovan remarks that the skulls of the Kinnelconnell tribe, which he saw in Doona Church, were "higher in the forehead and broader than those of the Connacians."

Erris was anciently inhabited by the *Damhnanns*, or *Damnonii*, a Firbolg tribe, who held the territory for some centuries. They were conquered by Tuathal Teachtmair, a Milesian king, some time in the second century. The family of O'Caithniadh (O'Kane) now held sway until about the beginning of the 14th century, when the Anglo-Norman and Welsh families of Burke, Barret, Lynnot, and others obtained a foothold in Erris, and eventually became the rulers of it. In or about the middle of the 17th century the district was colonized by the ancestors of most of the principal families now in existence there. The exact date of this immigration does not seem to be clearly known, but, from some pedigrees collected by O'Donovan in 1838, the families he mentions would seem to have been in the district for six or seven generations. He notes that the people "have no other chronology but the number of generations since their emigration, a very primitive mode of calculating time." Counting a generation as thirty years, eight or nine must have now elapsed, giving the colony the probable age of 240 to 270 years. O'Donovan also states that "Ballycroy and Ballymonnelly (an adjacent district) were colonized by tribes from Tirconnell about two centuries ago"; "Ballycroy was colonized by several families from the same county, who settled under O'Donnell"; and adds, "the principal surnames among them are M'Sweeny, O'Clery, O'Gallagher, Conway, MacManamon, and O'Friel. These still speak the Ultonian dialect of the Irish, and are called by their neighbours *na hUltaigh*, i.e. the Ulstermen." The colonists are said, by tradition, to have come to the district by sea, and to have landed at Fahy, near Doona Castle.

In the Appendix to the "Genealogies, Tribes, and Customs of Hy Fiachraoh," in the notes on the O'Clery family, the following mention is made of the movement of this family into Ballycroy from Donegal:—"*Cucoigeriche, or Peregrine O'Clery, the eldest son of Lughaidh.*—He married one of the Mac Sweenys, of the county of Donegal; by whom he had two sons, Diarmaid and John. It appears from an inquisition taken at Lifford on the 25th of May, 1632, that he held the half quarter of the lands of Coobeg and Doughill, in the proportion of Monargane, in the barony of Boylagh and Bannagh, in the county of Donegal, from Hollantide, 1631, until May, 1632, for which he paid eight pounds sterling per annum to William Farrell, Esq., assignee to the Earl of Annandale; but, as the document states, being 'a meere Irishman, and not of English or British descent or sirname,' he was dispossessed, and the lands became forfeited to the king. Shortly after this period he removed, with many other families of Tirconnell,

to Ballycroy, in the south of the barony of Erris, in the county of Mayo, under the guidance of Rory or Roger O'Donnell, the son of Colonel Manus, who was slain at Benburb in 1646, and the ancestor of the present Sir Richard Annesley O'Donnell, of Newport."<sup>1</sup> This would place the settlement at about 1640, thus agreeing closely with the traditional number of generations since the families concerned came to Erris.

More modern history can scarcely be said to exist. Owing to the wildness and remoteness of the region, it became in the last century a resort for smugglers, of whom many tales are told which belong more to legend than to history.

In the first half of the present century, about 1840, the district was opened up by the construction of the first good road, and brought more into contact with the outer world; but it still remains greatly isolated and comparatively unknown.

#### VIII.—CONCLUDING REMARKS.

Little remains to be said in conclusion. As this paper, like its precursors, is a record of facts observed, collected as means of forming a basis of comparison between different parts of Ireland, theories and personal opinions are not ventured upon.

The tradition as to the origin of the greater part of the people of Ballycroy seems to be fully borne out by facts, but it seems probable that all the aboriginal families were not driven out by the colonists, and that some of them, remaining in the district, have become absorbed into the mass. It was stated by some of the people that the families whose ancestors "came from the North" rather looked down upon some of their neighbours, whose people were there before them, as they do on the inhabitants of the surrounding districts. The physical differences between the Ballycroy people, and those of the rest of Erris, are more noticeable in the casts of features and darker nigrescence than in their physical proportions, though, as before mentioned, some of these are noteworthy.

#### IX.—BIBLIOGRAPHY.

The literature referring to this region is very scanty, but the following make more or less mention of it:—

ANONYMOUS.—"The Saxon in Ireland" (London, 1851).

BALD.—"Map of the County of Mayo" (1813).

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<sup>1</sup> His family were hereditary historians to the O'Donnells.

BENNETT.—“Six Weeks in Ireland” (1848).

THE FOUR MASTERS (*cf.* O'DONOVAN).

KNIGHT, PATRICK, C.E.—“Erris in the Irish Highlands and the Atlantic Railway” (Dublin, 1836).

MAC FIRBIS, DUALD (*cf.* O'DONOVAN).

MAXWELL, W. H. :

“Wild Sports of the West” (1829).

“The Dark Lady of Doona.”

O'DONOVAN, JOHN :

“MSS. Letters to the Ordnance Survey of Ireland” (1838).  
In the Library of the Royal Irish Academy.

“The Annals of the Kingdom of Ireland,” by the Four Masters. Translated and Annotated by JOHN O'DONOVAN, LL.D.

“The Genealogies, Tribes, and Customs, of Hy Fiachrach, commonly called O'Dowda's Country. From the Book of Lecan in the Royal Irish Academy, and from the Genealogical MSS. of Duald Mac Firbis, in the Library of Lord Roden” (Dublin, 1844).

OFFICIAL :

“Census of Ireland, 1891,” vol. iv., No. 3.

“Memoirs of the Geological Survey of Ireland.”

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#### DESCRIPTION OF PLATES III. AND IV.

Plates III. and IV. are from original photographs of the people taken during this visit.

## VII.

ADDITIONS TO THE HEPATICÆ OF THE HILL OF HOWTH,  
WITH A TABLE SHOWING THE GEOGRAPHICAL  
DISTRIBUTION OF ALL THE SPECIES KNOWN TO  
GROW THERE. BY DAVID McARDLE.

[COMMUNICATED BY F. W. MOORE.]

[Read APRIL 13th, 1896.]

IN the summer of 1893, shortly after writing a provisional list of the "Hepaticæ of the Hill of Howth," which the Royal Irish Academy did me the honour to publish,<sup>1</sup> I was engaged in making further research on the hill; and I was fortunate in gathering a liverwort, which was new to me, growing in some quantity amongst the limestone rocks near Ballykill. I had very little difficulty in determining its correct name to be *Jungermania attenuata*. It belongs to the *barbata* group, and was figured by Sir William Hooker in his fine work on the British Hepaticæ, under the name of *Jungermania barbata*,  $\beta$  *minor*. A specimen collected by Mr. E. M. Holmes at Abbey Wood, Kent, which is included in Carrington and Pearson's excellent Fasciculus (No. 74), quite settled the identification.

This was apparently the first discovery of *Jungermania attenuata* in Ireland. It grows most luxuriantly in company, and mixed with a pretty moss *Tetraphis pellucida*, which also seems hitherto to have escaped notice in the county Dublin district. Professor Lindberg, in his "Musci Scandinavica," calls the former *Jungermania gracilis*, Schleich; and Mr. M. B. Slater, F.L.S., to whom I sent specimens of the Howth plant, says:—"It is a pity the name *attenuata* has priority, as *gracilis* is more expressive of its habit of growth."

This interesting find was encouraging, and Mr. Moore wrote to Captain Rochford (Lord Howth's agent) for permission to collect in the demesne, which was kindly granted for the first four months of last

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<sup>1</sup> Proceedings, 3rd Ser., vol. III., p. 108.

year, during which time I paid it several visits with good results, and the list would not be so extensive if this request had not been granted.

Such species as the rare *Jungermania minuta*, *Scapania æquiloba*, and *Lejeunea flava* var., grow in great luxuriance. The last, in company with the commoner species *Lejeunea serpyllifolia*, clothes the large stones, and the stems of trees which margin a small stream. The pretty *Lepidozia reptans* and *L. cupressina* grow in large cushion-like patches, and such exuberant growth I have only found at Killarney. The centre of the demesne is sheltered on all sides, ancient lianas of honeysuckle hang from tree to tree, and on these and the fallen and decaying logs, with the damp genial atmosphere, liverworts and mosses grow in profusion. I do not know a prettier sight than the banks of *Pellia epiphylla*, and *Lophocolea bidentata*, yards in extent, with their white pellucid fruit stalks glistening with dew-drops, rising from the green velvet carpet of fronds, which I enjoyed in the wood one April day. The outer portion is backed up with stately conifers and rare shrubs, which quite surround the historic castle. The termination of the demesne at the hill is a natural rockwork, planted with choice rhododendrons, which grow luxuriantly, some of them attaining large dimensions, and, when bearing their trusses of bloom, are a sight well worth going there to see.

To my former list I have added nineteen species. One of these is new to the Irish Flora, and fourteen are additions to the Co. Dublin list of Hepaticæ; also seven varieties of more or less botanical interest. The total number of species now known to grow on the Hill of Howth is fifty-five. The appended Table, which shows their geographical distribution, will, I trust, be interesting, and I have endeavoured to make it as complete as possible, so far as the material for doing so at my disposal would allow. A glance over it will show that some of the Howth plants are local in Ireland. At the present time Howth is the only locality recorded in Ireland for *Cephalozia Francisci*, and *Jungermania attenuata*. *Plagiochila asplenoides* is rarely found in fruiting condition, so I have given a description of the male plant, which does not seem to be well known. The range of most of the species in Scandinavia and the Pyrenees is very striking, and it is interesting to note that the Hill of Howth plants extend mostly over the northern continent of Europe to North America, and from Pikes Peak, across the Rocky Mountains, to Cape Horn, Australia, New Zealand, Cape of Good Hope, West Indies, and Java. Four are found on the Island of Teneriffe, others in the Azores and Canary Islands. All the species, excepting three, are also found in Yorkshire

at various elevations. The West Riding has moorland hills up to 2000 feet. East Riding has wold chalk hills to 850 feet (cultivated). The North has moorland hills up to 2500 feet. For this information, and many other valuable hints as to the identification of critical species, I offer my best thanks to the well-known Yorkshire botanist, Mr. M. B. Slater, F.L.S., of Malton; also to Lord Howth, for granting through his agent, William Rochfort, Esq., J.P., of Cahir, permission to collect in the demesne.

*The asterisk (\*) before a name denotes that the species, or variety, is new to the Co. Dublin.*

- \* *Frullania dilatata*, Linn. (Dum.). Proliferous form, bearing leafy shoots on the stems, and leaf margins, which reproduce the plant. *Hab.*—On rocks by the side of a stream near the Baily Lighthouse, February, 1894.
- 1. *Lejeunea serpyllifolia* (Mich. Dicks.). Libert. Carrington and Pearsons, Exic., Nos. 135, 195. By the side of a small stream in the demesne, on stones, and on decaying wood, plentiful. April, 1895.
- 2. \**Lejeunea flava*, Swartz *var.* On stones and on the trunks of trees in the demesne. April, 1895.  
Sub-sps. \**Lejeunea Moorei* = *L. Moorei*, Lindberg, Act. Soc. Sci. Fenn. x., p. 487. Dr. D. Moore on "Irish Hepaticæ,"<sup>1</sup> p. 615, with excellent figure on plate 44.
- 3. *Lepidozia cupressina*, Sw. (Dum.). *Jungermania reptans*,  $\beta$ . *pinata*, Hook. Brit. Jung., t. 75. *L. tumidula*, Taylor. On peat amongst rocks, Ballykill, April, 1894; in the demesne, on damp peat, March, 1895.
- \**Cephalozia catenulata*, Huben., *var. pallida*. Spruce. Amongst *Tetraphis pellucida*, Ballykill, bearing perianths, February, 1894.
- \**Cephalozia divaricata*, Smith (Dumort), *var. starkii* (= *J. starkii*). Funk. Nees. Hep. Eur. II. Syn. Hep. 134. On a damp bank near the Baily Lighthouse, April, 1893.
- 4. *Lophocolea heterophylla*, Schrad. Journal Bot. i. p. 66. Hook. Brit. Jung., t. 31. On decayed wood, Ballykill, April, 1893; Howth demesne, April, 1895.

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<sup>1</sup> R.I.A. Proc., Ser. II., vol. II., Science, p. 590.

McARDLE—*Additions to the Hepaticæ of the Hill of Howth.* 115

5. *Chiloscyphus polyanthus*, Corda. Hook. Brit. Jung., t. 62. By the side of a stream in the demesne, April, 1895.
6. *Saccogyna viticulosa*, Mich. (Dumort). Hook. Brit. Jung., t. 60. On a damp bank, Howth demesne, March, 1895.
7. \**Scapania æquiloba*, Dumort. Carrington's Brit. Jung., p. 81, n. 3, pl. 8. fig. 26, *ex parte*, 1875. In the crevices of the rocks, Ballykill (very fine), 1894-5; plentiful in the demesne, April, 1895.
8. \**Scapania aspera*, Müll. Pearson, in Journal of Botany, December, 1892, tab. 327. On rocks amongst moss in the demesne, April, 1895.
9. *Scapania resupinata*, Dumort. E. Bot. t. 2437. Amongst rocks in the demesne, April, 1895.  
*Scapania resupinata*, Dumort, *var. recurvifolia*, Hook. Brit. Jung., t. 21, fig. 8. On a peaty soil amongst the heather, Ballykill, 1894, in the demesne, April, 1895.
10. *Plagiochila asplenoides*, Linn. (Dumort). Hook. Brit. Jung., t. 13. On a damp bank, and on stones in the demesne, bearing perianths, which contained unfertilised archegonia. Male plant smaller, with a stout stem one inch or more in length, of a brown colour, arcuate, flagelliferous at the base, with copious root-hairs, apex suddenly incurved. Leaves distant below, small, obovate or cuneate at apex, increasing in size upwards, more crowded, and overlapping, decurrent at the dorsal side, which has the margin plain to the apex, the ventral ciliatodentate. Amentæ, at the incurved apex of shoots, formed of from four to seven pairs of altered leaves, saccate at the base, overlapping for one-third upwards, and enclosing the antheridia, which are large, obovate to spheroidal in shape, with a well-marked hyaline ring, pseudopodia as long as the antheridia, of which there are three in the saccate base of each altered leaf.
11. *Jungermania barbata*, Schreb. Hook. Brit. Jung., tab. 70. Among rocks in the demesne, April, 1895.
12. \**Jungermania attenuata*, Lindenberg. *J. barbata*,  $\beta$  *minor*. Hook. Brit. Jung., t. 70, figs. 18-22. Carr. and Pearson's Exic., No. 74. *J. gracilis*, Schleich, Lindb., in Mus. Scand. p. 7. Amongst rocks growing with *Leucobryum glaucum*, Hampe, and with



*Tetraphis pellucida*, at Ballykill plentiful, June, 1893, Feb. 1894. Howth demesne very fine, April, 1895. New to the Irish Flora.

13. \**Jungermania ventricosa*, Dicks. Hook. Brit. Jung., tab. 28. Among rocks, Ballykill, 1894-5. In the demesne, 1895.
14. \**Jungermania alpestris*, Schl. Exs. II. 59. Carrington and Pearson's Exic., 109. On a damp bank at the rabbit-warren near the "Ben," very rare, April, 1893.
15. \**Jungermania biorenata*, Lindenberg. Syn. Hep., p. 82. Under *J. excisa*, Sm. Eng. Bot., tab. 2497. On the hard peaty soil at Ballykill, 1893-4, in the demesne, April, 1895, very rare. *Pellia epiphylla*, Linn., var. *endivæfolia*, Dicks. Thallus linear, elongated. Dioecious. In a marshy place at Kilrock Quarries, 1893.
16. *Blasia pusilla*, Linn. Sp. Pl. 1605. Hook. Brit. Jung., tab. 82-84. Boggy place at Ballykill (fertile), March, 1894.  
\**Metageria furcata*, Linn. Proliferous form, with young plantlets budding from the margin of thallus of the parent plant. On the stems of trees near the ground by the side of a stream near Howth village, March, 1894. Damp bank at a small bog, Ballykill, 1895.
17. \**Riccardia latifrons*, Lindberg. Nat. Soc. Fl. Fenn., 13, p. 372. Hook. Brit. Jung., tab. 45, figs. 4-7 et 12. Autœcious, rarely parœcious, large, pellucid, thallus long and broad, divided into wide stag-horn-like lobes, more or less oblong, wedge-shaped, very obtuse, and emarginate, plano-convex. Cells large, oblong, rhomboid; perichætical bracts few; calyptra large and less verrucose than in *R. multifida*. Andrœcium, narrow, oblong, almost affixed to the side of the perichæcium. Lindberg<sup>1</sup> in *Hepaticæ in Hibernia mense Julii*, 1873, lectæ. On a small bog at Ballykill, 1893-4, in the demesne, fertile (parœcious), April, 1895.
18. \**Lunularia cruciata*, Linn. (Dumort.), *L. vulgaris*, Micheli. Nov. gen. 4 t. 4. On damp ground in the demesne, April, 1895.
19. *Conocephalus conicus*, Neck (Dumort.), *Marchantia conica*, Eng. Bot. t. 504. Bank of a small stream which flows into the sea near the Bailly Lighthouse, February, 1894. Stream near Howth village, April, 1893.

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<sup>1</sup> Acta Societatis Scientiarum Fennicæ, x.

	Ireland.	England (Yorkshire).	Scotland.	Pyrenees.	France.	Germany.	Scandinavia.	Extra European.
<i>Callania dilatata</i> , . . .	×	W. E. N. ×	×	×	×	×	×	Teneriffe.
" <i>tamarisci</i> , . . .	×	W. N. ×	×	×	×	×	×	N. & S. America.
<i>Peucea serpyllifolia</i> , . .	×	W. N. ×	×	×	×	×	×	N. & S. America.
" <i>flava</i> var., . . .	E & S W ×	.. ×	S. W. ×	..	..	..	..	W. Indies; S. America.
<i>Adula complanata</i> , . . .	×	W. E. N. ×	×	×	×	×	×	W. Indies, C.B.S.; Madeira; Teneriffe; N. & S. America; N.Z.
<i>Antia trichomanes</i> , . . .	×	W. E. N. ×	×	×	×	×	×	N. & S. America.
<i>Epidozia reptans</i> , . . .	×	W. E. N. ×	×	×	×	×	×	N. America.
" <i>cupressina</i> , . . .	E & S W ×	W. rare ×	..	..	×	×	..	W. Indies; N. America.
" <i>setacea</i> , . . .	×	W. E. N. ×	×	×	×	×	×	N. & S. America.
<i>Phalozia catenulata</i> , . .	×	W. N. ×	×	×	×	×	×	—
" <i>multiflora</i> , . . .	E. ×	W. E. N. ×	×	×	×	×	×	N. & S. America.
" <i>bicuspidata</i> , . . .	×	W. E. N. ×	×	×	×	×	×	Java; C.B.S., Falklands.
" <i>Lammersiana</i> , . . .	×	W. E. N. ×	×	..	..	..	..	N. America.
" <i>connivens</i> , . . .	×	W. E. N. ×	×	×	×	×	..	—
" <i>curvifolia</i> , . . .	×	W. & N. ×	×	×	×	×	×	S. America.
" <i>Francisci</i> , . . .	Howth. ×	N. ×	×	×	×	×	×	—
" <i>frutans</i> , . . .	E. & W. ×	N. ×	..	..	×	×	×	—
" <i>sphagni</i> , . . .	×	W. E. N. ×	×	×	×	×	×	Abyssinia; N. & S. America.
" <i>denudata</i> , . . .	E & S W ×	N. ×	..	×	..	..	×	N. & S. America.
" <i>divaricata</i> , . . .	×	W. E. N. ×	×	×	×	×	×	—
" <i>elachista</i> , . . .	S. & E. ×	.. ×	×	..	..	×	×	—
<i>Upania resupinata</i> , . . .	×	W. E. N. ×	×	..	..	..	×	Teneriffe.
" <i>æquiloba</i> , . . .	N. & E. ×	W. N. ×	×	×	×	×	×	—
" <i>aspera</i> , . . .	×	W. N. ×	..	..	..	×	×	—
" <i>nemorosa</i> , . . .	×	W. N. ×	×	×	×	×	×	Java; N. & S. America.
" <i>undulata</i> , . . .	×	W. E. N. ×	×	×	×	×	×	Canaries.
<i>Polypodium alicans</i> , . .	×	W. E. N. ×	×	×	×	×	×	Madeira; N. & S. America.
" <i>minutum</i> , . . .	E & S E ×	W. N. ×	×	×	×	×	×	—

	Ireland.	England (Yorkshire).	Scotland.	Pyrenees.	France.	Germany.	Scandinavia.	Extra European.
Lophocolea bidentata, .	X	W. E. N. X	X	X	X	X	X	W. Indies ; America ; N Canaries ; N. America.
,, heterophylla,	X	W. E. N. X	..	X	X	X	X	N. America.
Chiloscyphus polyanthus,	X	W. E. N. X	X	X	X	X	X	N. America.
Plagiochila asplenoides, .	X	W. E. N. X	X	X	X	X	X	N. America.
Nardia crenulata, . . .	X	W. E. N. X	X	X	X	X	X	—
,, gracillima, . . .	X	W. N. X	X	X	X	X	X	—
,, scalaris, . . .	X	W. E. N. X	X	X	X	X	X	—
Jungermania sphærocarpa,	X	W. N. X	X ?	X	X	X	X	—
,, barbata, .	X	W. N. X	X	..	X	X	X	Pike's Peak, America.
,, attenuata, .	Howth. X	W. N. X	X	..	X	X	X	—
,, ventricosa, .	X	W. E. N. X	X	X	X	X	X	Pike's Peak, America.
,, alpestris, .	X	W. X	X	X	X	X	X	—
,, bicrenata, .	E S & W X	W. E. N. X	X	X	X	X	X	—
,, incisa, .	X	W. E. N. X	X	X	X	X	X	N. America.
,, inflata, .	X	W. E. N. X	X	..	X	X	X	—
Saccogyna viticulosa, . .	X	W. X	X	X	X	X	X	Canaries ; Ter- riffé.
Cesia crenulata, . . .	X	W. E. N. X	X ?	..	..	..	..	—
Pellia epiphylla, . . .	X	W. E. N. X	X	X	X	X	X	N. America.
,, calycina, . . .	X	W. E. N. X	X	X	..	X	X	[Spitzbergen.]
Blasia pusilla, . . . .	X	W. N. X	X	X	X	X	X	N. America.
Metzgeria furcata, . .	X	W. E. N. X	X	X	X	X	X	Australia ; N.Z.
,, conjugata, . .	X	W. N. X	X ?	..	X	X	X	N. & S. America Australia.
Riccardia multifida, . .	X	W. E. N. X	X	X	X	X	X	N. America ; Indies ; Pa- lands ; N.Z. Australia ; [Nova Zembla]
,, latifrons, . . .	E. & S. X	N. X	P X	..	..	..	X	—
,, pigunis, . .	X	W. E. N. X	X	X	X	X	X	N. & S. America
Lunularia cruciata, . .	X	W. E. N. X	X	X	X	X	X	Azores ; Canari-
Conocephalus conicus, .	X	W. E. N. X	X	X	X	X	X	Azores ; N. Am- rica.

VIII.

A STUDY OF THE LANGUAGES OF TORRES STRAITS,  
WITH VOCABULARIES AND GRAMMATICAL NOTES.  
(PART II.) BY SIDNEY H. RAY, Member of the Anthropo-  
logical Institute, and ALFRED C. HADDON, M.A., Royal  
College of Science, Dublin.

[Continued from the PROCEEDINGS, Ser. III., Vol. II., p. 616.]

CONTENTS OF PART II.

viii. Sketch of Saibai Grammar.	xi. Sketch of Daudai Grammar.
ix. Specimens of the Saibai Lan- guage.	xii. Specimens of the Daudai Lan- guage.
x. Saibai-English Vocabulary.	

VIII.—SKETCH OF SAIBAI GRAMMAR.

There is only one text available for the elucidation of Saibai grammatical forms. This is a translation of the Gospel of Mark (16) made by Elia, a native of Lifu, who was placed on the island of Saibai by the London Missionary Society. Sharon's Vocabulary (MS. 8) contains the terminals and pronouns, and there are also a few sentences taken down at Muralug by one of us, and others from Saibai and Boigu at the end of Sir W. MacGregor's Vocabulary (23). But by far the most valuable grammatical notes on the language are those found in the Kowrarega (Muralug) Vocabulary of Macgillivray, which represent substantially the same language as the Saibai translation.<sup>1</sup>

With these materials we have done our best to draw up a Grammar of the Language, but it is doubtful whether the whole is strictly

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<sup>1</sup>These were based on communications made by Mrs. Thomson (Gi'om), a white woman who had been held in captivity by the natives of Muralug for more than four years ["Voy. Rattlesnake," I., p. 301].

accurate. It will, however, form a basis for future investigation and may thus lead in the future, to more accurate knowledge. Macgillivray felt the want of accuracy in his materials, and in the introduction to his Vocabulary writes thus :—

“For the materials composing the Kowrarega Vocabulary, I am almost entirely indebted to Mrs. Thomson. Unfortunately, however, her total want of education prevented her from acquiring any idea of the construction of the language; nor could she always be made to understand the meaning of a question—however simple in its form—framed to elicit information on this point. Even by carefully sifting at leisure hours the mass of crude materials obtained from her and written down at each interview, day by day, I did not make sufficient progress in the grammar of the language to enable me to pursue the subject further, until her value as an authority had so far declined that it was prudent to reject it altogether. Nearly all the words originally procured from Mrs. Thomson were subsequently verified either by herself or by our Kowrarega visitors” [“Voy. ‘Rattlesnake,’” II. p. 277].

The Saibai translation was printed in Sydney, and was apparently never revised by the translator or by anyone conversant with the language. It contains numerous typographical errors; words are wrongly divided, and probably often mis-spelled. Many phrases defy all attempts at analysis even when the English and Lifu equivalents are well known. The translation had therefore to be very cautiously used. It has been necessary to consult throughout the version in the translator’s native tongue, and many references to the latter will be found in the pages of the Grammar.

The Saibai version was no doubt made from the Lifu New Testament of 1873. Of this we find evidence as follows :—

1. Mark, i. 19. The Saibai has *Iakobou Lebedaiō*, James of Zebedee, following the Lifu idiom in *Iakobo i Zebedaiō*. (*Lebedaiō* is a printer’s error for *Zebedaiō*.)

2. Mark, vi. 35. “The time is far passed,” is translated *paupa kutrapa*, literally the Lifu *heji hē*, it is evening.

3. Mark, vi. 48. In *senabi waci kubil tonar foa*, the fourth watch of the night, *waci* is the English word *watch* (Lifu *o = ch*) and occurs in the Lifu version in the same place; *ngōne la waci ne jinte hna eken*.

4. Mark, x. 4. “Put her away” is translated *palamulpa gudā*

*wasan*, put them two away, and follows the Lifu *mate sei nyidoti pi*. *Palamulpa* and *nyidoti* are dual pronouns. In Lifu a married woman is supposed to have a child, and is usually addressed by courtesy as "you two."

5. Mark, x. 34. "The third day" is translated *goiga thrin*, from the Lifu *la drai hna thrin*. In both versions *thrin* is the English numeral *three* with the Lifu causative suffix *n*. Cf. a similar instance in Miriam, Pt. I., p. 525.

6. Mark, xvi. 10. The words "she went" are rendered *palas-uzarman* from the Lifu *hnei nyidoti hna tro*, they two went (lit. by them two gone). Mary Magdalene, being regarded as a married woman, is spoken of as though having a child.

7. The word *a* is frequently used as a verbal particle in the Saibai translation, and especially when it is so used in the corresponding Lifu phrase. Cf. in Mark, xiv. 37. Saibai: *Noi mangiso a iman tana a utui*. Lifu: *Hnei anganyideti hna klepeti a ohnyi angate a mekol*.

8. The characters *ō, ē, tr* for *t, dr* for *d*, show the Lifu basis of the orthography.

9. English, Greek, and Samoan words introduced have the same form in Lifu and Saibai; e. g. *wan* (one); *gavana* (governor); *waina*, (wine); *kiona*, (χωιν); *setauro*, (σταυρον); *kumete*, (Sam. 'umete).

There are some interesting instances of adaptation by the translator. These give us glimpses of the life of the Torres Straits' natives. The exact rendering of the Lifu has, in some cases, been modified in order to obviate the necessity of explanation or to suit the comprehension of the native mind. Thus the statement in Mark, II. 3, "When they could not come nigh unto him for the press, they uncovered the roof where he was, and when they had broken it up they let down the bed whereon the sick of the palsy lay," is plainly inapplicable to the Torres Straits house. The native dwelling is usually a frail structure of bamboo, often with a sloped roof and thatched with leaves. The idea of four men carrying another upon the roof would be absurd. Though the Lifu version states that the bearers went to *la hune uma*, the top of the house, a phrase which is just as inapplicable to the sugar-loaf shaped houses of Lifu, it must be remembered that the Lifu version was made by a European, and that it was no doubt made clear in teaching that the house referred to was strong and flat-roofed. The translator of the Saibai Gospel avoided both explanation

and absurdity by stating that *tana arakato putran lagou kalangu*, "they cut a hole from the back of the house," which, with walls of pandanus leaves, could very easily be done.

Again, in Mark, v. 38, the phrase which is in English "them that wept and wailed greatly," and in Lifu, *angate a iluilu me iteijen me teije-kelegē*, is translated into Saibai as, *mura mai adan, a mainō kunaran paruia nidizō*, all shed tears and made mourning with foreheads of lime. In the islands of Mabuiag and Tud, mourners cover their bodies with a mud or paste made from crushed coral. (See Haddon, "Ethnography," in Journ. Anth. Inst., xix., pp. 403, 416.) Another curious phrase gives us a picture of the sick native running to the missionary or teacher for *gōugu*, "physic." It occurs in the leper's appeal (Mark, i. 40), *sike ubinemepa ngulaig ngōna butupatan gouguan aima*, "if thou wilt, thou canst cleanse me, making physic." Jairus is made to say (Mark, v. 23), *kapusa ngi ngapa-uzar nginu getō nabepa gamutariz a gouguan mani, a na igilenga*, "a good thing thou come, thy finger touch her, and bring physic and she lives."

In Mark, viii., "Peter took him," is translated: "*Petelu dimunu pagean*, Peter pinched him. A passage, similar to those here given, occurs in the Miriam Gospels (Mark, xv. 16). *Gair polisman Iesu kebi metaem tegared, nei Praitorio a polisman nosik taraisare*; the policeman took Jesus to a little house, name Praetorium, and bring a band (i.e. a row) of policemen. In the Straits the policemen stationed on each island are the representatives of authority.

As the Miriam Gospels were revised by the English missionaries, such phrases would no doubt be modified, but they have escaped notice in the unknown and unrevised Saibai version.

In the following grammar, examples from the Gospel are unmarked. Words and phrases from Macgillivray are marked (M), and from Sharon (S), MacGregor (B).

### *Dialects.*

It is extremely difficult to define the dialectical differences in the speech of the western islanders of the Straits. There are certainly variations in pronunciation and enunciation, and these have caused various travellers to spell the same words in different ways. There is also, to some extent, a difference in the words used:—

1. *Kauralaig*.—In this division the natives of Muralug have been

considerably influenced by those of Australia, in the neighbourhood of Cape York. There has no doubt been a large amount of intercourse with the Gudang blacks, but this has not apparently affected the grammatical structure of the languages. The Gudang Vocabulary of Macgillivray shows numerous words identical with those of the islands, yet the agreements are all in the names of objects, not in verbs or pronouns. In Muralug words, as they appear in the vocabulary, the slurred pronunciation of words is often marked by the insertion of *r*. Example: *barit, mari, sarima, kdraba*, for *bait, mai, saima, kaba*, &c.

2. *Gumulaig*.—The speech of these islanders, in the centre of the Straits, probably represents the purest form of the language.

3. *Saibailaig*.—The islands inhabited by this division (Boigu, Dauan and Saibai) are very near to the Daudai coast, and have probably received words thence. MacGregor found that Saibai words were known to the natives of Mowat and Dabu, who, ignorant of each other's dialect, had to open a conversation in the island dialect. The names given to the natives of the mainland, opposite Saibai and Boigu, *Dabu-lai*, and *Toga-lai*, show what is probably the Saibai termination for a clan, *laig*. The names Dabu and Toga may be the Saibai, *darpa* and *tuga*, bush and mangrove. On the mainland, in the same neighbourhood, is the Mai Kussa, which in Saibai means Pearl River. In Boigu final *ö* is more clearly pronounced than in Saibai.

4. *Kulkalaig*.—These people occupy the eastern portion of the Straits, and are nearest to the Miriam. The language of Masig shows more words like the Miriam than that of any other of the islands.

### § I.—*Alphabet*.

1. VOWELS.—*a* as in *father*; *ä* as in *at*; *e* as *a* in *date*; *ë* as in *let*; *ê* as Lifu *ê* and French *e* in *le*; *i* as *ee* in *feet*; *î* as in *it*; *o* as in *own*; *ö* as in *on*; *ö* as German *ö* in *schön*, or nearly as English *o* in *forty*; *u* as *oo* in *soon*; *û* as in *up*.

MacGregor's Vocabulary has a few words with *ä* (*mäi, dada-gäiga*), but no indication is given of the sound intended. In the other vocabularies these words are spelled with *a* or *ö*. The vowel *ö* represents a sound which varies between *a* and *o*, and some words appear to be spelled indifferently with *a, e, o, or ö*: e.g. *kai, kei, koi*, or *köi*; *sabi* or *söbi*; *kasa* or *kösa*; *mari* or *möri*. A few words in Macgregor have *ö* where others have *u*; e.g. *möi* for *mui*. The



Gospels have *tōridiz* for *tauradiz*; *tanōriz* for *tanuriz*. At the end of a word *ō* is very common, and in that position was written *a* by Macgillivray. MacGregor notes that, in Boigu, final *ō* is more clearly expressed than in Saibai.

In a few cases *e* changes with *i*, *getō*, *gitalenga*.

2. DIPHTHONGS.—*ai* as in *aile*; *au* as *ow* in *cow*; *ei* as *ay* in *may*.

Macgillivray wrote *ei* where the translation has *ai*.

3. CONSONANTS.—*k*, *g*; *t*, *d*; *p*, *b*; *w*; *j*; *s*, *z*; *r*, *l*; *m*, *n*, *ng*. These are sounded as in English, *ng* being the *ng* in *sing*.

There is some confusion between the sounds of *t* and *d*, *p* and *b*, *s* and *z*.

In the Saibai Gospel *t* and *d* are often found with *r*, as *tr* and *dr*. These are not written in the vocabularies, and must therefore be regarded as due to the Lifu translator's pronunciation of the Saibai, as in Lifu, *t* and *d* are commonly strengthened with *r*.

Examples: *drurai*, *padra*, *drudrupizō*, for *durai*, *pada*, *dudupizō* and *tradiz*, *tridan*, *tronar*, *katro*, for *tadiz*, *tidan*, *tonar*, *kato*.

Macgillivray wrote *th* in a few words, *thi*, *thung*. *Th* is also found in introduced words. *F*, in *fad*, *lokof*, is a change from *p*. The distinction between *w* (consonantal) and *u* (vocal) has been better observed in Saibai than in Miriam. *J* is not found in the Gospels, and, in introduced words, is represented by *i*. MacGregor has *j* in a few words where others have *s*, *japulaika*, *japudamino*, *jaji*, for *zapulaig*, *zapudamoin*, *zazi*. Macgillivray also has *j* for *z*; *kaje*, *ajir*. *S* and *z* often interchange, *pudis* and *puzis*; *musur*, *muzura*; *susu*, *suzu*. In some words Macgillivray wrote *ch* for *s*, *chena*, *china*, for *sena*, *sina*; and also used *sh* in *shuma* for *sumai*. He noted also that the Gudang tribe of Cape York substituted *ch* for *s* in pronouncing Kowrarega (*i.e.* Muralug) words. Words in *ch* and *sh* will be found in our vocabulary under *j*.

*R* is rarely found as an initial (*cf.* Miriam), but is common as a medial and final. It sometimes interchanges with *l*, *tardan*, *barpudan* for *taldan*, *balpudan*. For the insertion of *r* in Muralug words, see the preceding note on Dialect.

A few interchanges are found between *ng* and *n*; *ngursata* and *nursak*. MacGregor has *gn* as well as *ng*, but this is probably an error in transcription.

4. COMPOUND CONSONANTS.—The only real compound consonants found (with the exception of *dr* and *tr* already noted) are *gw* and *kw*.

A few others result from the juxtaposition of two simple consonants through the omission of a vowel. Macgillivray wrote *ts* for *s* in *tsika* for *sikö*.

5. CONTRACTIONS.—A vowel is often dropped between two consonants, e.g. *klak*, for *kalak*; *krangipa* for *korongaipa*, *prateipa*, *purteipa*, in past, *purutan*. The final *ö* or *i* is often very indistinctly pronounced and is very frequently omitted. Macgillivray has the following note on contractions in Muralug :—

“Regarding the allusion to a terminal vowel, it may be mentioned here that as most Kowrarega words end in a vowel, its absence, when a vowel commences the following word, is commonly owing to elision. Ex.—‘*udzu umai*, = my dog,’ becomes ‘*udz’umai*.’ When the last consonant in a word is the same as the first in the following word, one of the letters is omitted. Ex.—‘*apa pirung*, = soft ground,’ becomes *ap’irung*.’ There are numerous other contractions, as ‘*ai*’ for ‘*aidu*, = food’; ‘*aiye*’ for ‘*aiyewel*, = come here’; ‘*mue utsem*, = the fire has gone out,’ for ‘*mue utsimem*,’ &c.” [II. 279.]

## § II.—Pronouns.

1. PERSONAL.—These are declined as nouns by means of suffixes. Gender is distinguished in the first and third person.

The simplest forms are as follows :—

### (a) Nominative.

- |           |  |
|-----------|--|
| Singular, | 1. <i>ngai</i> , I (masculine); <i>ngazo</i> , <i>ngözo</i> , I (feminine).  |
|           | 2. <i>ngi</i> , thou.  |
|           | 3. <i>noi</i> , <i>nu</i> (s); <i>nuë</i> (m), he, it (masculine); <i>na</i> , she.  |
| Dual,     | 1. inclusive of person addressed, <i>aba</i> (m); exclusive of persons addressed, <i>ngalbe</i> , <i>ngalabe</i> , <i>albei</i> (m), he and I. |
|           | 2. <i>ngipel</i> , you two.  |
|           | 3. <i>pale</i> , <i>palae</i> , they two.  |
| Plural,   | 1. (inclusive), <i>ngalpa</i> , <i>alpa</i> (m), you and I; (exclusive), <i>ngoi</i> , <i>ngöi</i> , we, they all and I.                       |
|           | 2. <i>ngita</i> , <i>ngitana</i> (m), you all.   |
|           | 3. <i>tana</i> , <i>äri</i> (m), they all.   |

An analysis of the pronominal forms is not without interest. The *na* of the third person singular (fem.) is no doubt the same with the demonstrative particle *na*, and is found also in the third plural *ta-na*

combined with a plural demonstrative *ta*. In the second plural *ta* is combined with the pronominal word *ngi* as *ngi-ta*, and Macgillivray gives it with *na* also as *ngi-ta-na*. In the third person masculine *nu* or *noi* (with its drawled Muralug pronunciation *nuē*) is probably the same as the feminine *na*, for *o* frequently varies to *ō* and *a* (see § I., 1). The affix *i*, which is also found in the first person masculine, may, perhaps, mark the masculine, but is more likely to be the same with the demonstrative *i*. It occurs also in the first plural inclusive *ngō-i*, which is probably the same as *nga-i*.

The *pel*, *palae* of the dual is also found combined with the demonstratives, and is the root of the verb *palaŋ*, to divide, open. It may also be used as a numeral. Latham suggested the meaning of 'pair,' and pointed out that the root *p-l*, or some modification of it, is the equivalent for *two* in very many of the Australian languages. Latham also noted the close correspondence of the Saibai (Kowrarega) use with that of the Western Australian language. "These so closely agree in the use of the numeral *two* for the dual pronoun, that each applies it in the same manner. In the *third* person it stands alone, so that in Western Australian *boala* and in Kowrarega *pale* = *they two*, just as if in English we said *pair* or *both*, instead of *they both* (*the pair*); whilst, in the second person, the pronoun precedes it, and a compound is formed; just as if in English we translated the Greek *σφῶι* by *thou pair* or *thou both*."<sup>1</sup>

The affixes *lbe* and *lpa* have a certain amount of likeness, though their presence in the *exclusive* dual and *inclusive* plural cannot be explained. The *l* may probably be the same as the plural suffix *l* (see § III.), whilst *be* and *pa* may be compared with the demonstrative *bi*, or with the dative suffix *pa*, towards, and the directive suffix *pa*. Without the affixes and demonstratives, the pronominal forms are reduced to two only, *nga* and *ngi* (for *ngo* or *ngō* in the plural exclusive is the same as *nga*, see § I). These two are, as Latham pointed out,<sup>2</sup>

<sup>1</sup> "Remarks on Voyage of the 'Rattlesnake'" in *Opuscula*, p. 225, and Macgillivray, II. p. 333.

<sup>2</sup> The difference between the first and second persons being expressed by different modifications (*nga*, *ngi*) of the same root (*ng*), rather than by separate words, suggests the inquiry as to the original power of that root. It has already been said that, in many languages, the pronoun of the *third* person is, in origin, a demonstrative. In the Kowrarega it seems as if even the basis of the first and second was the root of the demonstrative also. ["Remarks on Voyage of the 'Rattlesnake,'" p. 333, and *Opuscula*, p. 225.]

probably modifications of the same root *ng*, and have a demonstrative origin. *Nga* is also the interrogative, who? and is found in the directive *nga-pa*, hither, to here.

(b) *Instrumental case.*

- Singular, 1. *ngatō, ngatu* (♂), (masc.) ; *ngōzo* (fem.)  
 2. *ngidō, ngidu* (♂).  
 3. *noidō, nudu* (♂), (masc.) ; *nadō, nadu* (♀), (fem.)

No instrumental forms have been found in the dual and plural numbers. The suffix *du, tō* may be compared with the Miriam *de*. There seems little doubt but that this case corresponds to what has been called in Australian Grammars the nominative of the agent. As used in the Saibai Gospels, they express the person as the agent of an active verb.

Example : *ngatō tanamulpa wasan*, I sent them away ; *sike mata ngōzo gamuia tradiz nongo dumawakuia, wa, ngōzo igililenga*, if only I touch his garment, then I live ; *Ioane siēi ngatō kuikō patan*, John there I beheaded, or beheaded by me ; *ngido ngōna kasa wanan*, you have left me alone ; *ngidō ngona mina mabaegadō maipa*, you make me a good man, i.e. call me good ; *noidō mamain ita seven areto*, he took seven loaves ; *noidō nubepa iman*, he saw him ; *noidō noino wasan tanamulpa*, he sent him to them ; *mi watri pawa noidō mani?* what evil has he done ? *nadō Petelun iman*, she saw Peter ; *nadō ngaeapa mani*, she has done (it) to me.

The examples of the use of the nominative and instrumental pronouns collected by Macgillivray were too few to generalize upon. He noted, however, that *ngatu, ngidu, nudu, nadu* appeared "to be used only with a certain class of verbs, of which an example is afforded by the sentence '*ngatu nudu matumina* = I struck him'; and the use of the second set of these pronouns (i.e. the nominative) is illustrated by '*ngai nue*' (not *ngatu nudu*) *mulem, &c.*, = I told him, &c.," [II., p. 299]. The difficulty in Macgillivray's examples is that both subject and object have the same affix, but according to the analogy of the Gospel the sentence should be *ngatō noino mataman*, with an objective in *no*. His second example would be *ngai nubepa mulix*, I told to him. In many cases the ordinary form of the nominative is used instead of the instrumental forms.

(c) *Objective.*

When directly governed by an active verb, the singular pronouns take a suffix *na* or *no*.

1. *ngōna, ngona* ; *ana* (M).
2. *ngino*.
3. *noinō, nu* (s), (masc.)

The dual and plural do not differ in form from the nominative.

Example: *Mingu ngita ngōna nutan* ? why do you try me ? *ngita ngōna gasamoingā*, ye did not take me ; *ngi adapa usar a ngino malupa taen*, go out and cast thyself into the sea ; *noinō gasaman*, take him ; *noinō ngapa ngaeapa poiban*, give him here to me.

*Ana* is found only in Macgillivray's notice. He gives it as equivalent to "me or my," and states, "I do not understand the exact meaning of this, . . . so give an example," "*ana gamu lupeipa* = my body is shaking (or I have the ague)" [II. p. 299]. He also gives "*ana piki lalkall* = I had a dream" ; "*quiku kikiri ana mizzi* = I have a sick head, or a head-ache" ; "*ana pibur aidu* = give me (some) food."

(d.) The *Possessive* is formed as with nouns by the suffixes *u*, *n*, *no*, or *nu*.

- |           |  |
|-----------|--|
| Singular, | 1. <i>ngau, ngaumun</i> (masc.) ; <i>uzu</i> (M), (fem.)         |
|           | 2. <i>nginu</i> .  |
|           | 3. <i>nongo, nungu</i> ; <i>nnu</i> (M) ; <i>no</i> (s), (masc.) |
|           | <i>nanu</i> , (fem.)   |
| Dual,     | 1. <i>abane</i> (M), inclusive ; <i>albeine</i> (M), exclusive.  |
|           | 2. <i>ngipen</i> ; <i>ngipeine</i> (M).                          |
|           | 3. <i>palamun</i> ; <i>palāman</i> (M, s).                       |
| Plural,   | 1. <i>ngalpan</i> (inclusive) ; <i>ngoimun</i> (exclusive).      |
|           | 2. <i>ngitamun</i> ; <i>ngitanamun</i> (M).                      |
|           | 3. <i>tanamun</i> ; <i>tanaman</i> .                             |

The *mu* in the plural indicates number. Cf. Dative.

Example: *Ngau apu*, my mother ; *ngau iadai*, my message ; *ngau nel*, my name ; *nginu lagō*, thy house ; *nginu gotō*, thy hand ; *nginu apu*, thy mother ; *nongo kuiku*, his head ; *nongo kaimil*, his relations ; *nongo kutaig*, his brother ; *nanu apu*, her mother ; *nanu lagō*, her house ; *nanu ngulaig*, her ability ; *albeine kaje* (M), child of us two ; *ngipen parū*, the front of you two ; *ngipen ieudepa*, the asking of you two ;

*kaje chena ngipeine* (м)? is that the child of you two? *palamun tati*, the father of them two; *ngalpan Augada*, our God; *ngalpan zapul*, our properties; *ngoimun murasa*, all our things; *ngitamun tati*, your father; *ngitamun korkak*, your hearts; *tanamun korkak*, their hearts; *tanamun puruka*, their eyes.

The word *ne* given in Sharon's vocabulary as "his," is probably the noun suffix *n* or *ne*. No examples are given of its use.

(e) The *Dative* is expressed by the suffix *-pa*.

- |           |  |
|-----------|--|
| Singular, | 1. <i>ngasapa</i> .  |
|           | 2. <i>ngibepa</i> .  |
|           | 3. <i>nubepa</i> (masculine); <i>nabepa</i> (feminine).          |
| Dual,     | 1. inclusive ( <i>not found</i> ); <i>ngalbelpa</i> (exclusive). |
|           | 2. <i>ngipelpa</i> .   |
|           | 3. <i>palamulpa</i> ; <i>palenipa</i> (м).                       |
| Plural,   | 1. <i>ngalpalpa</i> (inclusive); <i>ngoimulpa</i> (exclusive).   |
|           | 2. <i>ngitamulpa</i> .   |
|           | 3. <i>tanamulpa</i> .  |

The *be* of the second and third singular, and the *pel* of the dual, have, no doubt, a demonstrative origin. In the plural and third dual *mu* is probably an indication of number. (Cf. *moi*, *mi* in verbs, and the *mu* of *mura*, all.) The *l* inserted before the suffix when *mu* is used, may be compared with the noun suffix *l*, though *mul* itself may represent *mura*, all. (Cf. *ba* in Miriam pronouns.) The *ni* in Muralug third dual cannot be explained.

Examples: *Ngì ngasapa iapupoibiz*, you ask me; *ngai ubinmepa ngibepa ngasapa poiban Ioane bapataisou kuikō*, I wish for thee to give to me John Baptist's head; *noi iapupoibiz nubepa*, he asked him; *ngalbe ubinmepa ngibepa a ngi ngalbelpa poiban senabi sa*, we two wish for thee (that) thou give to us two that thing; *wara mabaeg ngipelpa iamuliz*, any man says to you two; *mi mabaeg ngalpalpa kōmakōma maigingā*, whoever is not opposed to us; *ngoimulpa muliz*, tell to us; *moidemin ngoimulpa*, prepare for us; *ngai ngitamulpa iamuliz*, I say to you; *Iesu modobia iamuliz tanamulpa*, Jesus answered them.

Macgillivray has *ngai-aikēka*, = for myself, and *nu'abēpa*, = for himself, and gives the examples:—*aikēka mule* = tell me; *nu'abēpa chena wir* = give that to him [II. 299].

(f) The *Ablative* is shown by the suffix *-ngu*, fem. *s*.

- |           |  |
|-----------|--|
| Singular, | 1. <i>ngaungu</i> .  |
|           | 2. <i>nginungu</i> .   |
|           | 3. <i>nongonongo</i> , <i>nungungu</i> , (masculine); <i>noi gungu</i> ,<br><i>nanuz</i> (feminine). |
| Dual,     | 1. ( <i>not found</i> ).   |
|           | 2. ( <i>not found</i> ).   |
|           | 3. <i>palamulngu</i> .   |
| Plural,   | 1. ( <i>not found</i> ).   |
|           | 2. <i>ngitamulngu</i> .  |
|           | 3. <i>tanamulngu</i> .   |

In the singular *ngu* is added to the possessive forms, except in the third feminine, which has the ablative suffix *s* (or *si*) ordinarily used with demonstratives. (See Adverbs, § VI.) In the plural and third dual *mul* is inserted as in the dative forms.

Examples: *Tanamun korkak ngaungu koi sigal*, their hearts are far from me; *ngi adapadan, watri mari, nungungu mabaegöngu*, come thou out, bad spirit, from him, from the man; *börodan kadaipa mani nabi ai noi nungu*, the earth brings forth the food from itself; *noidö sevene demoni nguroweidan nanuz*, he had cast out seven demons from her; *tana getöwani palamulngu*, they released them two.

(g) The *Ergative*.—This is shown by the suffix *ia* which is given in Sharon's Vocabulary as the equivalent of "with." The Gospel usually agrees, but in some cases it is difficult to apply this translation. (See more fully in Nouns, § III.)

- |           |                          |
|-----------|--------------------------|
| Singular, | 1. <i>ngaibia</i> .      |
|           | 2. <i>ngibia</i> .       |
|           | 3. <i>nubia</i> .        |
| Dual,     | ( <i>not found</i> ).    |
| Plural    | 1. ( <i>not found</i> ). |
|           | 2. <i>ngitamunia</i> .   |
|           | 3. <i>tanamunia</i> .    |

In the singular *ia* is added to the nominative, with the demonstrative *bi* inserted. In the plural *ia* is added to the possessive forms.

Example: *Ngaibia kaimi*, follow me (be mate with me); *nga mabaeg ngaibia garabö tradis?* Who touched me? *tanamun utuilö ita*

*ngaibia*, they have been (their abiding is) with me; *mabaag ina nibuwanan ngibia amadan*, love the man near thee; *Iesu nubia gimal tanoris*, Jesus sat on top of him; *palas matadōbura getōwanis senabi palamun api a nubia kaimi*, they immediately left their nets and followed him; *koda maigi ngitamunia*, don't let it be like (that) with you; *areto midō siēi ngitamunia*? how many loaves have you (what loaves there with you)? *ngoi muia utiz tanamunia*, we enter into them; *tanamunia ai ainginga*, they have no food.

For the suffix *ia*, in the sense of "have, possess," see Nouns, 4 (g).

(h) The *Locative* suffix *-nu* is not found in use with pronouns. The suffixes *nanga* and *nge* are discussed in the section on Nouns.

(i) A suffix *ka* appears with the pronouns *ngi* and *ngita*, but its meaning is not very clear. It may be an abbreviation of the future particle *kai*.

Example: *Ngika lakō usar nginu lagōpa*, go home again to thy house; *ngitaka mata korawaig*? don't you perceive?

(j) *Self* is expressed by the addition of *kusaig* to the singular pronouns *ngai* and *ngi*; *ngaikusaig*, myself; *ngikusaig*, thyself. In the plural the pronoun is reduplicated, *ngōingōi*, ourselves; *ngitangita*, yourselves; *tanatana*, themselves. In the third singular, himself is expressed by the simple pronoun *noi*.

Example: *Mipa ngitangita ia uman*? why did ye dispute among yourselves? *aipa baropudaipa tanatanamulpa*, to buy food for themselves; *durai noidō igilipaliz*, a *kōrawaig noino igilipalan*, he saved others, and he cannot save himself; *kapuxa noi ubigiasin noi*, let him deny himself; *Kusaig* is also used for "alone." *Iesu mata nongo kusaig siēi lagonu*, Jesus (was) there alone (only Himself) on the land.

## 2. INTERROGATIVE PRONOUNS.

(a) The personal interrogative is *Nga*? who? declined as follows:—

Nominative, *nga*? who?

Instrumental, *ngadō*? by whom?

Accusative, *nganō*? whom?

Possessive, *ngonu*? whose?

The dative, ablative, locative, and ergative do not appear.

Example: *Nga ngulaig igililenga*? who can be saved? *ngau dumawakuia ngo garabōtradiz*? who touched my clothes? *ngai nga*? I am who? *nga ngibepa poiiban senabi mura za ina*? who gave thee all



these things? *ngadō mani?* who took it? *ngadō kula taean?* who rolled away the stone? *ngonu paru ina?* whose face is this?

*Nga* is sometimes added to other words. Example: *Nga mabaog ngaibia garabōtradis?* who (what man) touched me? *nginu nelonga?* who is thy name? (cf. the Melanesian use of 'who' in asking a name).

(b) The interrogative used of things is *miži?* what? The following forms are found:—

Nominative, instrumental, and accusative, *miži?* *midō?* what?

Dative, *mipa?* for what? why?

Ablative, *mingu?* from what? concerning what? why?

The distinction between *miži* and *midō* is not clearly made out in the Gospel, but *midō* from its form should be instrumental.

Example: *Midō ngai?* is it I? or, do I do it? *miži ngi ubinmepa?* what do you wish? *kuikulumai vine apangu miži mani?* what did the lord of the vineyard? *ngai midō mepa ngibepa?* I do what for thee?

*Miži* is sometimes reduplicated. *Mižimiži sena noi keda augadapa ipidadō-pugan?* why does he thus blaspheme God? *mižimiži* is also used for 'which?' (of two) in Mk. II. 9.

(c) *Mi*, the root of *miži*, *midō*, is used prefixed to nouns as an interrogative adjective with the meaning 'what?' 'what sort of?'

Example:—*Miza?* what thing? *mi watripawa?* what evil? *mi tonar?* what sign? *mi lagō?* what place? *mi ia umamōipa?* what discussion? *mi muamu?* what wisdom? *Ngalpa Augadan baselaia mi ngadalnga minapa?* we make God's kingdom like what?

For *mipa* and *mingu*, see Adverbs, § vi.

3. DEMONSTRATIVE PRONOUNS AND ADJECTIVES.—These are formed by various combinations of particles, of which the separate meanings are not very clear. It seems possible, however, to classify them as follows:—

*na*, *bi*, simple demonstratives, directing attention.

Place,	{	<i>i</i> , place near; here.
		<i>se</i> , place, distant; there. Cf. adverb, <i>siei</i> , <i>sei</i> , there.
Number,	{	<i>pel</i> , <i>pal</i> , dual. Cf. pronouns, <i>palae</i> , they two; <i>ngipol</i> , you two; verb, <i>palan</i> , divided.
		<i>ta</i> , plural. Cf. pronouns, <i>tana</i> , they two; <i>ngita</i> , you two.

The combinations give the following words in the vocabularies and Gospel:—

*ina*, *inō*, this one, the, here; *nabi*, *inabi*, this, the, a; *inabi durai*, these. *nabi*, that, the.

*ipal*, the, these two, both.

*ita*, the, these; often used as a kind of plural article.

*sena*, that; *senabi*, the, those; *senabi durai*, those.

*sepal*, those two, both; *sepalbi*, those two.

*seta*, those; *setabi*, those.

*tabi*, those.

Example: *Ina, inō*: *ina koi sabi*, this (is) the great law; *wara tanamun inō*, this is one of them; *ngai inō*, it is I; *Keriso inō*, here is Christ.

*nabi*: *nabi ia*, the word.

*inabi*: *inabi kawa*, the people.

*ipel*: *ipel*, both (Macgillivray).

*ita*: *ita watri maril*, the evil spirits; *ita kaziēl*, children.

*sena*: *sena noi*, that same is he.

*senabi*: *senabi mabaeg utun*, the sower; *tana iman senabi mabaeg*, they saw the man; *senabi Iakobon kutaig*, the brother of James; *senabi nongo igalaig*, his friends; *senabi parpar ina*, such mighty works.

*sepal*: *ngipel sipalsei kai mangeman*, you two there, shall come.

*sepalbi*: *sepalbi sōbi*, those two laws.

*seta*:

*setabi*: *setabi magina kōziēl*, those little children.

*tabi*: *tabi gōiga siei*, those days there.

Some of these words are used with a locative sense, and as equivalents to the Lifu prepositions *ngone*, *kowe*, etc., with the article. Cf. § VII.

4. INDEFINITE PRONOUNS AND ADJECTIVES.—*Wara*, a, one, any, another, a certain, cf. numerals; *du, ita du, durai*, some; *mura*, many, all; *sepal*, both; *urapa*, the same; *wara . . . wara*, the one . . . the other; *wagedō*, the other; *manarimal*, a few; *sa, zangu*, something (existing); *pawa*, something (performed); *ia*, something (said); *mi mabaeg*, whoever, what man.

### § III.—Nouns.

1. NOUN FORMS.—A verb or adjective may be used as a noun without change of form; *ngulaig*, to be able, able, ability.

The suffix *isinga*, and its plural *moisinga*, appear to form nouns from a verbal root, and are thus used in the Gospel with possessive pronouns.

Example: *nidizō*, to do; *nongo nidaizinga*, his doing (Lifu, *la hnei nyidēti hna kuca*, the by him deed); *tanamun ngurupaizing*, their doctrine; *ngitamun kōrngaizinga*, what you have heard; *tanamun imaizinga*, thing they had seen; *mabaegau iautumoizinga*, men's commandments (Lifu, *la its thina hna ahnithē hnei at*, things ordered by men); *Augadan kalmel manamoizinga*, God's joining together (Lifu, *la hnei Akōtesie hna icasikoun*, the by God joined); *wara kōi ngabad gimal poidamoizinga a butupataizinga*, a large room above, furnished and prepared.

These suffixes appear to be used of persons, as well as of things. *Tana nubepa ngurōweidan getōlangaizinga*, they cast him out, shamefully handled (*lit.* a spoiled thing).

A suffix *lai* seems to form a verbal noun in the words: *toitupagailai*, prayer, from *toitupagaipa*; *nginu kapruakasilai*, your faith, from *kapruakasin*; *silamailai*, an uproar, from *silamai*, to fight. Other examples present some difficulty. *Tana getōwanizō senabi umaulai dōgam utui*, they let in the bed wherein the sick man lay.

The person performing an action is denoted by the noun *mabaeg*, plur. *mabaegal*, following the verbal root; *api-angai mabaeg*, fish-trap-setting man; *mamoe danalpatai mabaeg*, shepherd, sheep-watching man; *minarō pōlai mabaeg*, writer, mark-cutting man. Persons belonging to a place are distinguished by the suffix *laig*: *Nazareta laig*, man of Nazareta; *Saibai laig*, *Badulaig*. Hence also the names of the islanders of the Straits, though these are formed from the names of parts of the body and not from names of places: *Kaura-laig*, ear-people; *Gumu-laig*, body-people; *Kulka-laig*, blood-people. Similarly *laig* is used with other nouns: *kikiri laig*, sick person or people; *maidēlaig*, sorcerer; *igalaig*, kinsman.

In Mark, ix. 50, *laig* is abbreviated to *lg*, and appears in the plural: *kapuza ngita alasilgal*, have salt in yourselves, *lit.* good thing (if) ye (are) salt people. In Mark, vii. 26, is *lg*, with the dative suffix, *demonilgōpa*.

The word *igal*, suffixed, appears sometimes to form a personal noun, but its use is not very clear. *Ngita muamuagigal*, *ngita imaigigal*, you (are persons) without understanding, you do not see. In these examples the first *g* represents the negative. The affirmative has *zi*. *Tana imaizigal*, they that saw it.

Some adjectives are used with the word *idaig*, plur. *idaigal*, to form personal nouns. *Ngōlkai idaigal*, hypocrites; *tratra idaig*, a stammerer.

*Mael*, *mail* also appears as an affix forming nouns from verbs: *unamail*, the dead; *burugömulmael*, the harvest, the ripening; *igihilemael*, the living; *kousagimael*, the non-fruiting; *nongo butapölaizimael* his healings, those he had healed. The last three examples show the insertion of the affixes *le* (possessing), *igi* (wanting) and *zi* (thing). In *mael*, *ma* may be compared with the *ma*, *mu* of plural verbs, and *l* with the noun plural.

The instrument with which an action is performed is sometimes expressed by the word *sa*, (thing) following the verb.

Example: *niai sa*, a chair, sit-thing.

2. NUMBER.—The dual is expressed by the numeral *ukasar*, two, by the dual demonstratives, *sepal*, *sepalbi*, or by the dual pronoun, *palas*.

*Ukasar wapi*, two fishes; *ukasar dimur*, two fingers; *sepal giginö kazi*, two sons of thunder; *sepal magina mani*, two little (pieces of) money; *sepalbi söbi*, two laws; *palas api-angai mabaeg*, two fisher-men. Sometimes numeral and demonstrative are both used. *Sepalbi ukasar angai-dumawaku*, two garments.

The plural is indicated in various ways.

(a) By suffixes, *-l*, *-al*, *-el*, *-öl*, *-lö*: *Umail*, dogs; *tabul*, snakes; *sabil*, laws; *kusal*, beads; *mabaegal*, men; *babatal*, sisters; *pui-tamal*, branches; *kaziöl*, children; *ianalö*, baskets.

(b) By the plural demonstrative *ita* with or without the suffix: *Ita kasil*, children; *ita apal*, lands.

(c) By the plural pronouns: *Tana minarpölai mabaeg*, the scribes.

(d) Definitely by numerals, with or without the adjective *görsar*: *Tuelv iana*, twelve baskets; *tuelv görsar nanu watal*, twelve were her years; *foate köigörsar göiga*, forty days.

(e) By the adjectives *durai*, some; *mura*, all; *görsar*, many, or *köigörsar*, great many, with or without the demonstrative or suffix: *Durai nginu kutaig*, thy brothers; *durai kikiri*, some sick; *mura kikiri laig*, all the sick folk; *ita durai mabaegal*, some men; *mura mabaegau köziel*, men's sons.

(f) By context: *Ngapa mangisö urui palgisö a purutamoin*, forth came birds and ate (*purutamoin*, plur. verb).

Macgillivray has the following note on plurals in Kowrarega (i.e. Muralug):—

“To form the plural of a noun or adjective, the rule appears to be to add *le* as a postfix, sometimes previously supplying a terminal

vowel if required. Example: '*geta* = hand' becomes '*getale*' in the plural; '*kuku* = foot, *kukule*'; '*kutai* = yam, *kutale*'; '*ipi* = wife, *ipile*'; '*korne* = lad undergoing a certain ceremony, *kornele*'; '*makaow* = mat, *makaowle*'; '*bom* = fruit of pandanus, *bomale*.' There are exceptions, however; '*mari* = shell ornament,' makes '*marurre*' in the plural; '*gul* = canoe, *gulai*'; '*taupoi* = short, *taupoiingh*'; all nouns ending in *ra* have the plural in *re*, as '*kowra* = ear, *kowrare*'; and all ending in *kai* gain *jille* in the plural, as '*ipikai* = woman, *ipikaijille*'" [II. 279].

We have found no examples of plurals in *re*, *ai*, *ing*, or *jille* in the Gospel.

3. GENDER.—Sex can only be expressed by the use of the words *gara*, *inile*, male, or *ipi*, *madale*, female. *Garakasi*, male person, boy, man; *ipikasi*, woman, female person; *ipikaji burumō* (B), a sow; *inil-tiam*, a male turtle. For literal meaning of *inile*, *madale*, see Vocabulary.

4. CASE.—The noun is declined by means of suffixes. There appear to be nine cases, Nominative, Instrumental or Nominative of the agent, Accusative, Genitive, Dative, Ablative, Locative, Ergative, and Vocative.

(a) *Nominative and Instrumental.*

The nominative is the bare root. The instrumental is shown by a suffix. To agree with the pronouns, the suffix should be *dō* or *du*, but examples are not easily found, though we have in Mark, ix. 24, *maidō wokailnga*, cried out with tears. In most cases no suffix is used, and in others the termination (*-n*) is the same as the accusative.

Example 1: *Without suffix*.—*Gōiga palgizō*, the sun rose; *gubō papudamis*, the wind ceased; *tati tarai walmizin*, the father quick cried out; *mui usimoiginga*, the fire is not quenched.

Example 2: *With suffix n*.—*Bōrodan kadaipa-mani nabi ai*, the earth brings forth food; *nongo gamu kulan lapan*, cut his body with stones; *war mabaegan Augadan baselaia ugan*, a man waited for God's Kingdom; *adapa idumoin moroigan*, to be rejected by the elders; *durai kawakun noino gasaman*, some young men laid hold of him.

(b) *Accusative.*

As a general rule the noun in this case does not differ in form from the nominative, but a suffix *-n* is also found, especially with proper

names. This agrees with the accusative suffix in the pronouns *ngöna*, *nginö*, *nöino*. There seems, however, to be some confusion between the nominative and accusative.

Example 1: *Without suffix*:—*Noi purutan pukatö*, he eat locusts; *tana iadupalgan tanamun watri pawa*, they declared their bad deeds; *nginu dokam mani*, take thy bed.

Example 2: *With suffix*:—*Nadö Petelun iman*, she saw Peter; *Tana Iesunö gasaman*, they took Jesus; *gouguan mani*, bring medicine; *danal patamoiziu ita minarpölai mabaegan*, watch the scribes; *kulun tariz*, to kneel (*kulu*, knee).

(c) *Genitive or Possessive.*

This is shown by the suffixes *u* or *n*, *no*.

Example in *u*:—*Köziu tati*, the child's father; *pudau kuta*, a reed's point; *Iudaialaigau kuikulunga*, Jew's King; *mabaegau iautumoizinga*, man's commandments; *alasiu ter*, salt's flavour.

*n*:—*Augadan baselaia*, God's kingdom; *Mosen tusi*, Moses' book; *Simonane lagö*, Simon's house; *giginö kazi*, thunder's child; *asinan kazi*, asses' child (foal); *Simonan ipiu apu*, Simon's wife's mother.

There seems to be no distinction between *u* and *n*. It is indifferently *augadau* or *augadan*, *asinau* or *asinan*. There is a peculiar use of the genitive to denote "son of," e.g. *Iakobou Alefaio*, James son of Alpheus; *Iakobou Zebedaio*. This is evidently not a Saibai idiom, and is due to the translator's imitation of the Lifu *Iakobo i Alefaio*, *Iakobo i Zebedaio*, in which *i* is the genitive preposition. The meaning has, however, been curiously reversed, the Saibai being "Alphæus of James" and the Lifu "James of Alpheus."

(d) *Dative.*

The dative denoting motion to, or purpose for which a thing is intended, is shown by the suffix *pa*. It may be compared with the directive *ngapa* and the verbal prefix *pa*.

Example: *mabaegöpa*, to a man; *padapa*, to a hill; *daparpa*, to the sky; *muiapa*, into the fire; *wara mabaegöpa mulaigi*, don't tell (to) any man.

In names of persons *l* is usually inserted between the name and the suffix. Cf. *l* in the pronominal suffix *mulpa*.

Example: *Simonalpa*, to Simon; *Iesulpa*, to Jesus.

With names of places, the suffix is used, *Galilaiupa*, to Galilee;

and the meaning of "into" is also expressed by the word *au* before the noun. *Noi mangiz au Kaporenauma*, or by the adverb *sei*, there. *Tana mangizō sei Kaporenauma*, they went there (i.e. to) Capernaum.

For verbs governing the dative, see Syntax.

(e) *Ablative.*

The ablative expressing motion from, or origin, is shown by the suffix *-ngu*, and may be translated "from, through, or concerning."

Example: *Ngukingu*, from the water; *sunangu*, out of the synagogue; *noi ngitamulpa baptaiso maringu*, he baptises you from the Spirit; *nadō Petelun iman muingu koamapa*, she saw Peter warming himself from the fire; *pepe baradarangu*, from the thinness of the earth.

With personal nouns *l* is inserted as in the dative.

Example: *Heroda Ioanelngu akan*, Herod feared John; *marilingu*, from the Spirit.

For verbs governing the ablative, see Syntax.

(f) *Locative.*

The locative meaning on, in, or at, is expressed by the suffix *nu*.

Examples:—*Doidōnu*, in the wilderness; *iabugudanu*, on the road; *nongo purukanu*, on his eyes; *tanamun koikaknu*, in their hearts; *lagonu*, in the house.

There is another way of expressing the locative by the word *au*, in.

Example:—*Ioane baptaiso nubepa au Ioritana*, John baptised him in Jordan; *taimanu au Dekapoli*, on the border in Decapolis; *au gulai*, in a ship.

The demonstrative *senabi* is very often used to translate the Lifu *ngōne la*, in the.

Example:—*Nurō walōmizin senabi dōid*, a voice crying in the desert; *mura mudō garoweidamoin senabi pasa*, all the crowd assembled at the door.

(g) *Ergative.*

The ergative expresses the doing of a thing by means of, or at the same time with, another. It is shown by the suffix *ia*, and is translated "with" in Sharon's vocabulary, but the exact meaning seems difficult to define. A reciprocal meaning is sometimes present, e.g. when two things come in contact *ia* is used. Sometimes the meaning "by, alongside." Cf. the following examples:—

*Noi uzar a nabepa getia ielepān*, he came and took her by the hand; *lagō ngipen paruia*, village in front of you; *nongo igalgia*, among or by

his kinsmen ; *mata karengemin noi siëi ipoköxia kaxilaig ngawakazi*, but heard of him there by a woman having a daughter ; *tana wanan mura mabaegia paruia*, they put them before all the men ; *noi kalia snagi*, he looked back ; *gubö paruia*, wind (was) contrary ; *Iesu muia utix lagia*, Jesus was come into a house ; *noi maluia usar*, he walked on the sea ; *muia utemin ita burumia*, entered into the pigs.

Since this suffix gives the meaning of the Lifu, *thei*, with, which is idiomatically used for “ have,” we often find it used for “ have ” in the Saibai version, especially with pronouns, e.g. *areto sei ngitamunia midö?* what bread have you? (Lifu, *ije areto thei nyipunie*, how many loaves with you ?)

(h) *Vocative.*

The vocative is shown by the suffix *as* or *es*.

Example:—*ngurupai-mabaegae*, O teacher ; *ngau kaxiae*, O my daughter ; *Davitau kaxiae*, O son of David ; *ngawakaziëi*, damsel.

The words *Baba!* my father! *Ama!* my mother! are used instead of the common *tati* and *apu*. For a few other examples, see § IX., 3.

(i) There are other noun terminations, of which the use is not very clear. All that can be done here is to give some examples.

These endings are *nge*, *nanga*, *tai*, *ai*, *du*, *bo*, *böu*, *utu*, *asin*, *gar*.

Example: *Nge: Ngi ngönanumainginga Augadau ia*, a *mabaegau iange*, thou rememberest not God's things, but men's things ; *ngöde puinge*, like trees ; *vineu ap wara mabaegpange turan*, give the vineyard to other men ; *ngita muasin nubepa kidötasan sakai puru mabaegou lagonge*, ye have made it a den of thieves ; *noi keda ngadalnga umangange*, he was as one dead ; *ngau kusaig launga töridiz*, a *babange ngöna waeen*, receiveth not Me, but the Father that sent Me.

*Nanga: Poiban Mose nanga iautumiz*, offer the things Moses ordered ; *palae iamuliz tanamulpa keda Iesun iananga iautumiz*, they said to them as Jesus ordered ; *midö ngita ngasapa bois usar keda puru mabaeg nanga midö?* are you come out to me as against a thief ? *keda angela nanga*, like the angels ; *koigörsar mabaeg wagel-nanga kulainge*, many men last (shall be) first ; *iman keda noi nanga mido palamulpa iamuliz*, found as he had said to them.

*Nenga* is found in : *Nongo kapu minanenga*, his glory.

*Tai: Nongo notai nidiz*, touched his tongue ; *mura mabaeg alasenu taean muitai*, every man shall be salted with fire.



*Ai*: *Gulai patiz*, get into the ship. Macgillivray gives *gulai* as the plural of *gul*, but there are no examples in the Gospel. (See Plurals, p. 136.)

*Du*: *Ngita tana aidu poiban*, give ye them food. The common form is *ai*, food. Macgillivray has (II., p. 313): "As examples of the various forms of this word, I may give, *ana pibur aidu* = give me (some) food; *ina aio* ? = is this eatable? *ai* = it is eatable."

*B*, *bö*: This appears to be another spelling of the dative suffix *pa*. *Waliz gulab*, *walizö*, climb up into the ship. *Waliz gulpa* is also found.

*Böu*: *Koiaböu*, with a loud voice. *Koia* for *koi ia*.

*Utu*: This is, no doubt, connected with the verb *utui*, to lie down. *Ngawakaziutu lag*, the place where the girl was lying.

*Asin*: Perhaps connected with the verb-preposition *asin*, to be with. *Senabi nginu mekatasin*, in thy glory; *mekata*, shining, radiance.

*Gar*: *Palas getöwaniso Zebetaiogar palamun tati*, they left Zebedee their father; *nanu aigar barpudan*, all her living.

Some of these terminations are also found with pronouns. For examples, see Pronouns, § II.

(*j*) The possessive case of a pronoun is used with nouns in all cases. In this the Saibai use differs from the Miriam. (See Miriam Grammar, § III. *k*.)

Example: *Nongo kuikuigau nelpa*, to his brother's name; *ngau nelngu*, through my name; *nongo purukanu*, on his eye.

#### § IV.—Adjectives.

1. A few adjectives are used in a simple form. *Koi*, *kai*, big; *magi*, little; *kapu*, good; *wati*, bad; *pepe*, thin.

2. A distinctly adjectival form is given to a word by the affix *nga*. *Keinga*, large; *mapunga*, heavy; *towanga*, easy; *piranga*, *pirung* (M), wet; *gögainga*, weak.

A few adjectives have the termination *na* instead of *nga*; *magina*, little; *sumein* (M), cold.

Adjectives of quality are formed by adding *le* (Muralug, *re*, *ri*) to the name of a quality or thing, with or without the ending *nga*.

Example: *Mita*, taste; *mitale*, *mitalenga*, *mitalnga*, tasty; *kula*, stone; *kuläle* (M), stony; *nisö*, leaf; *nisalnga*, leafy; *kulka*, blood;

*kulkale*, red; *kuama*, heat; *kuamalnga*, hot; *kaura*, ear; *kaurare kuralenga*, possessing ears; *getō*, hand; *gitalenga*, possessing a hand.

The negative of adjectives in *le* or *lenga* is formed by adding *igi*, *gi*, or *ge* to the noun, with or without the ending *nga*. Cf. Miriam adjective in *kak*, Daudai *tato*.

Example: *Soba*, slow; *sobaginga*, smart; *tari*, quick; *taregi*, slow; *kōsi*, child, *kōzinginga*, childless; *mabaegōgi*, deserted; *mitainginga*, tasteless.

When persons are qualified *gigal* is sometimes used. *Ngita muamuagigal*, *ngita imagigal*, you (are) without understanding; you don't see.

A few adjectives are formed by reduplication as in Miriam.

Example: *Idi*, oil, *idiidi*, fat; *kubi*, charcoal, *kubikubinga*, black; *mudō*, crowd, *mudōmudō*, crowded.

Macgillivray has the following note on this method of forming adjectives:—

"The formation of many adjectives can be clearly traced: in fact, one of the most obvious features of the language—imperfectly as it is understood—is the facility with which many nouns may be converted into either adjectives or verbs. Thus, '*mapei* = a bite,' becomes '*mapeile* = capable of biting,' and is the root of the verb '*mapeipa* = to bite.' The positive adjunct '*leg*,' and its negative '*aige*,' are also used to convert nouns into adjectives: the former follows the same rules as those before given for forming the plural:—'*gizu* = sharpness,' becomes either '*gizule* = sharp' or '*gizuge* = blunt,' literally, 'sharpness possessing, or, possessing not': from '*nuki* = water,' we get the form '*nukile maram* = the well contains water,' or, '*nukegi maram* = the well is dry': '*danagi* = blind,' literally means, 'eye possessing not': as a further example, I may give, '*ipikai ajirge wap'ina badale mapeip* = the shameless woman eats this sore-producing fish'" [II. p. 301].

A few adjectives are formed by the addition of *thung*, meaning "like, the same as." Macgillivray gave the example, *gariga thung* = like the sun, or, as bright as daylight. No examples of this are found in the Gospel.

*Colours*.—Macgillivray noted that:—"There are two forms of each adjective denoting colour, except grey and white. Thus, 'black' is rendered either '*kubi-kubi-thung*' or, '*kubi-kubi tha*

*gamule*, both meaning 'like,' or, 'the colour of' the charcoal procured from '*kubi-kubi*' = touchwood.' 'Blue, green, and red' are denoted by compounds, signifying resemblance to 'deep water, a leaf, and blood,' respectively" [II. 303].

None of these forms are found in the Gospel, where "white" is *gamul* or *gamulōnga*; "red, purple," *kulukal*; "green," *maludōnga*.

In Haddon's mss., however, there is a series of colour names from Tud, similar to those of Macgillivray, but with *da* instead of *tha*. These names are:—

Red, <i>kulka-da-gömōla</i> .	Yellow, <i>dewa-da-gömōla</i> .
White, <i>kobi-kobi-gömōla</i> .	Blue, <i>malu-da-gömōla</i> .
Black, <i>kaibro-da-gömōla</i> .	Green, <i>elāra-da-gömōla</i> .

There are numerous compound adjectives, e.g. *kōikutalnga*, long, high; lit., possessing big ends; *kōiridanga*, hard; lit., very bony. Macgillivray gives the examples *wati-ngarare*, lame, bad-footed; *wati-ganule*, stinking, bad smelling; *wati-mitāle*, bad tasted; *wati-kaurare*, bad-eared, deaf, &c.

3. Comparison is made by two positive statements, or by a periphrasis.

Example: *Magina modobia Sodoma a Gomora senabi tonar balbai-tridan senabi lagal*, a little punishment Sodom and Gomorrah (in) time of rectifying (than) those cities; *matangadagido ngi muia utizō nabi igililenga a nginu getō paunapa patan a ukasukusukō, kalmel genapa taean, senabi mui usimoiging*, worthy (better) thou enter into life and thy two hands cut off (than to be) thrown with them into Gehenna, into unquenchable fire.

Likeness is expressed by *ngōde* or *ngada*, or in adjectival form, *ngadalnga*.

Example: *ngōde puinge*, like trees; *keda ngadalnga sinapi kōusa*, (it is) like a mustard seed; *ngalpa Augadan baselaisa mi ngadalnga minapa?* we make God's kingdom like what?

4. A superlative is expressed by means of the word *adapudiz*; lit., coming out beyond.

Example: *nga adapudiz?* who is greatest? *durai nia adapudiz*, the chief seats; *wara salli ainginga adapudiz sebalbi sōbia*, have not any law beyond these two laws; *Augadau kazi adapudiz*, Son of God most high; *mina kōisa adapudiz senabi pui mura*, real great things beyond all trees.

*Kōi* is used as a prefix to intensify the meaning of an adjective, as *kōisigal*, very far; *kōimapunga*, very difficult. Macgillivray gives the example, *ke'kamanale*, very warm.—[II. 303].

5. The peculiar adjectival expressions noticed in Miriam are found also in the Saibai Gospel. *Zagi*, *saginga*, poor; lit., nothing, not having a thing; *sapu*, rich; lit., mother of things; *sapulaig*, a rich person; *kasa-kupal*, naked; lit., bare-bellied.

### § V.—*Verbs*.

1. Many nouns and adjectives may be used in their simplest forms as verbs, e.g. *noi mai*, he weeps; *ngi mina*, you are true. Where verbal roots have been found in the vocabularies, they invariably end in a vowel: *ngurapai*, teaching; *mulai*, speaking; *pōlai*, cutting.

#### 2. VERBAL FORMS.

(a) *Causative*.—There seems to be no definite way of expressing the causative. In many cases it is shown by a suffix *pa*, which is the same as that forming the dative case of a noun, and the same formation as that found in Miriam, where the causative in *om* is also the dative suffix. (See Miriam Grammar, p. 536 of Part I.). Macgillivray regarded the suffix *pa* in Muralug as the ending for the present tense of the verb; and in Haddon's mss. it is also found as a present tense ending. As used in the Saibai Gospel *pa* expresses an infinitive rather than a present tense, and is very often used with another verb.

A very common way of expressing a causative is by the use of the verb *mepa*, to do, or make, the tenses of which (*mizi*, *mani*), as given in the vocabularies, often form verbs from nouns.

Example: *Launga-mani*, to rebuke, make nothing of; *ubi*, *ubin*, a want; *ubin-mepa*, to wish, want; *adapa*, out; *adapa-mani*, to put out; *ngapa*, hither, come hither; *ngapa-mani*, make come hither, i.e. bring; *mina-man*, to measure, span, make a mark; *mari-man*, to pine, become a spirit, &c. Other verbs are used in a similar way. (See Verbal Prefixes.)

(b) *Negative*.—The negative verb is formed by affixing *igi* or *iginga* to the root. This is analogous to the formation of negative adjectives from nouns, and the verb usually has a participial or adjectival meaning.

Example: *Tana kapuakasi ginga*, they do not believe, or they are unbelieving; *mui usimoiginga*, the fires are not quenched, or they do not quench the fires; *ngita getōtridaiginga*, you have not read; *ngita araiginga*, you do not flee.

In some cases a negative is formed by means of the adverb *launga*.

(c) *Interrogative*.—The words *nga* and *mi* and their cases, *ngadō*, *mipa*, *mingu*, introduce an interrogative sentence. (See Pronouns and Adverbs.)

In many cases *midō*, what, is found instead of *mi*. *Midō ngi mangis?* hast thou come? *Midō mata ngadogidō nidixi kapu pawa ina sabath?* is it right to do good deeds on the sabbath?

Sometimes the interrogative sentence does not differ in form from the affirmative. *Ngita getōtritraiginga?* Have you not read?

(d) *Quotations*.—These are introduced by *keda* (Miriam, *kega*).

Example: *Mura iamuliz keda, noi umanga*, all said, he is dead; *noi walmixin keda, Iesuae Davitan Kasi, ngona sibuwanan*, he cried out, O Jesu, David's son, pity me; *noi iapupoibiz nubepa keda, ngi wara iman?* he asked him, do you see anything?

(e) *Substantive verb*.—There is no substantive verb, though in Sharon's vocabulary *inō*, *ina*, *noi*, *ita*, and *nu* are all given as equivalents for "is." These words have already been shown as demonstratives, § II. A few examples of sentences without verbs may be given here.

Example:—*Nginu nelenga?* thy name (is) who? *kain ngurupai mingadalnga ina?* new teaching like-what (is) this? *ngau nel Legeona, ita ngōi koima*, my name (is) Legion, these we (are) many; *ngai inō Keriso*, I here (am) Christ.

The meaning of the English "to be," in compounds, is often expressed by a circumlocution.

Example: *kōigorsar mabaeg kulai taiz, a lako wagel taiz*, many men that are (lit. occupy) first place, again (or next time) are last; *ngau sagetō launga poiban*, it is not mine (not my work) to give.

### 3. MOODS AND TENSES.

In the various vocabularies of the Saibai (with the single exception of Macgillivray's valuable Muralug (Kowrarega) list, there is a great want of exactness in the meanings given to the verbs. For example, the verbs 'give,' 'drink,' and 'eat' appear in the five principal lists as follows:—

Macgillivray,	.	.	.	<i>pibeipa</i> ,	<i>wanipa</i> ,	<i>purtoipa</i> .
MacGregor,	.	.	.	<i>paibanö</i> ,	<i>wanin</i> ,	<i>pourtanö</i> .
Macfarlane,	.	.	.	<i>poiban</i> ,	<i>wani</i> ,	<i>purtan</i> .
Stone,	.	.	.	<i>paiban</i> ,	<i>wanika</i> ,	<i>prutika</i> .
Sharon,	.	.	.	<i>poibaipa</i> ,	<i>waniz</i> ,	<i>purutan</i> .

Macgillivray alone assigns any definite meaning to the words given (the forms in *pa* being given as present tense). An examination of the Gospel translation does not make the subject much clearer, even after a careful comparison with the Lifu version used by the translator. In Lifu, verbs undergo no change of form to express time or mood, all variations in meaning being expressed by separate words or particles; and hence, no doubt, the Lifu translator's difficulty in using the Saibai affixes. The compilers of the vocabularies seem to have taken the words as given in the Gospel in a general sense, and with no attempt to discriminate their meaning. That the discrimination is difficult, appears from the remarks of Macgillivray, whose notice of the verb is the only one in which an endeavour has been made to ensure accuracy. For this reason it is here given in full. He says [II., p. 307]:—

"After tabulating 100 Kowrarega verbs in all the different forms in which they had occurred to me, I yet failed in arriving at a knowledge of their mode of formation, owing to the deficiency of data on one hand, and the presence of some apparently defective and irregular verbs on the other. Still, some of the results are worth recording. Leaving out the consideration of the irregular verbs, I can speak with certainty of only two moods, the indicative and the subjunctive, of the present and the past (probably really further divisible) tenses of the former, and the present of the latter. As an example I may give the verb 'to strike,' of which the root is assumed to be '*matum* = a stroke.'

Indicative present,	<i>nudu ngatu matumeipa</i>	= I am striking him.
„ perfect,	„ „ <i>matumina</i>	= I struck him.
„ future,	„ „ <i>matumeipakai</i>	= I shall strike him.
Imperative present,	„ <i>ngidu matumur</i>	= strike him.

"Assuming a root to each, I find 94 of the verbs under examination to agree in having the present tense of the indicative terminating in *pa*: of these, 70 end in *eipa*,<sup>1</sup> 14 in *ipa*, 6 in *opa*, and 1 in *aipa*.

<sup>1</sup> Misprinted *aipa* in the original.

"The perfect tense (setting aside some inexplicable irregularities) exhibits a great variety of terminations, for the formation of which no rule can yet be given: these are *an*, *ana*, *ani*; *in*, *ina*, *eina*; *om*, *ema*; *eima*, *eiun*; and *un*.

"The future tense alone is perfectly regular; it is simply formed by adding *kai* to the present.

"The present tense of the imperative mood in those verbs having the present of the indicative ending in *ipa*, terminates (with one exception in *o*) in *ir*: in the others the terminations of this tense are *ur* (the most frequent); *ar* (the next in order of frequency), *ara*, *ari*; *ada*, *eada*; *e*, *eio*, *eir*, *erur*; and *o*.

"After all I am inclined to suppose that the Kowrarega verb, although apparently complicated, is of simple construction; and that its various modifications are caused by the mere addition to its root of various particles, the exact meaning of which (with one exception) is yet unknown. That exception is the particle *aige* or *ge*, the mode of employment of which is shown by the following examples:—

*Wawp' yinu ngai purteip purteipaige* = I am not eating your fish.

" " " *purteiunaige* = I did not eat your fish.

" " " *purteipakaige* = I shall not eat your fish.

" " " *nanu ngi purtaige* = Don't eat his fish.

"A few examples may be given in illustration of the preceding remarks:—

English.	Present.	Past.	Future.	Imperative.
Eat,	<i>purteipa</i> ,	<i>purteiun</i> ,	<i>purteipakai</i> ,	<i>purtar</i> .
Bite,	<i>mapeipa</i> ,	<i>mapana</i> ,	<i>mapeipakai</i> ,	<i>mapur</i> .
Take away,	<i>meipa</i> ,	<i>mani</i> ,	<i>meipakai</i> ,	<i>mari</i> .
Tell,	<i>mulepa</i> ,	<i>mulem</i> ,	<i>mulepakai</i> ,	<i>muleada</i> .
Lie down,	<i>yuneipa</i> ,	<i>yunum</i> ,	<i>yuneipakai</i> ,	<i>yunur</i> .
Leave behind,	<i>yuneipa</i> ,	<i>yunem</i> ,	<i>ynneipakai</i> ,	<i>yunur</i> .
Shoot,	<i>uteipa</i> ,	<i>utum</i> ,	<i>uteipakai</i> ,	<i>utur</i> .
Enter,	<i>uteipa</i> ,	<i>utema</i> ,	<i>uteipakai</i> ,	<i>uterur</i> ."

We now proceed to discuss the expression of moods and tenses as found in the Gospel, reference being made to the foregoing notice by

Macgillivray, and to the Lifu Testament of 1873, from which the Saibai version was made.

(1.) *Mood*:—

(a) *Imperative*.—The verbal root is sometimes used indefinitely as an imperative. *Ngapanagi!* behold! look here!

Only one instance is found in the Gospel of the suffix *-r* given by Macgillivray as imperative. *Ngi gedō pagae-ar*, stretch out thy hand.

The word with the ordinary (tense) ending is used in the imperative. *Kadaitarizo*, stand up! *Iman senabi ngitamun kōngaizinga*, take heed what ye hear! (lit. find your hearings); *Ngalpa meamaipa wadōkapa*, let us go to the other side! *Iagiasin, gudō mumi!* be quiet, be still! *Ngi adapadan!* you come out! *Ngasapa muliz*, tell me! The plural imperative has in some cases an affix *ziu, miu*. *Ngita karengemisiu*, hear ye! *ngapanagemiu*, look ye! *Magina kōzingu getōwanemiu ngapa ngaeapa*, let little children come to me! A dual ending *mōriu* is seen in, *Ngipel uzarmōriu*, go ye two! from *uzar*, go.

A prohibitive is expressed by the verbal root with the negative affix. *Wara mabaegōpa mulaigi*, tell not any man! Usually, however, the word *maigi* (from *mai*, the root of *mepa, mani*, to do, and *igi*) is used to prohibit an action. *Maigi puru*, do not steal! *Maigi akan*, do not fear! *Maigi karengemin*, do not listen!

The Lifu imperative expressed by *loi e*, it is good that, is literally translated by the Saibai *kapuza*, good thing. *Kapuza ngita ladun*, go ye! (Lifu, *loi e trojē nyipunie*); *kapuza ngi ngapa uzar*, you come here! Cf. Miriam *debele* (Pt. I., p. 537). 'Must' or 'ought' is translated, as in Miriam, by the noun meaning 'work,' *zagetō* (hand thing) with the possessive pronoun. *Ngau zagetō miēi nidiz?* what must I do? *Nginu zagetō Iehovalpa ngōnanumani*, thou must remember Jehovah.

(b) *Infinitive*.—There is no special sign for the infinitive, one verb simply following the other. *Kuikaiman koima maumizin*, began to preach much; *ngai ngapa mangizō turan mabaeg balebaizinga launga*, I came not here to call upright men.

(c) *Desiderative*.—A wish is expressed by the word *ubin-mepa*, to make a wish, to want. *Miēi ngipel ubin-mepa ngai ngipelpa poiban?* What do you two want me to give you? *Wara lago muia utiz, a ubin-mepa ita durai mabaegal nubepa imaingina*, went inside another house and wanted men not to find him.



(d) *Potential*.—Ability to perform an action is expressed by the word *ngulaig*, knowing, or to know how. *Nga ngulaig getōwanis senabi watri pawa?* who can forgive sins? In Mk. xiv. 8, *ngulaig* is used with a possessive pronoun. *Na muasin nidisi nanu ngulaig*, she has done her ability, i.e. what she could. The negative of *ngulaig* is *korawaig*. *Tana korawaig aipurutan*, they could not eat; *noi korawaig usar*, he could not go; *ngai korawaig*, I don't know.

(e) *Subjunctive and Conditional*.—There seems no definite way of expressing a dependent sentence, and there is no change of form in the verb. The words used to introduce a conditional sentence are *sike*, if; *ba*, if; *toma*, *tuma*, lest; *tomaka*, perhaps. The adverb *wa*, yes, is often used between the protasis and the apodosis: the dependent sentence is frequently in the future.

Ex. *Sike ngalpa iamuliz daparngu, kai noi mulepa, Mipa ngita nubepa törädöginga?* if we say, from heaven, he will say, Why have you not received him? *Ngalpa usar senabi amadan lagö, ngai maumizineka siei*, we go to the next place, that I may (will) preach there; *sike kauralaig, wa, noi karengemin*, if (he) possesses ears, then he hears; *ba ngatö tanamulpa waeen, tana umuwalepa siei iabugudanu*, if I send them away, they (will) faint there on the way; *ngai ngöbia kalmel umanga, wa, ngai nginungu gudötödaiginga*, if I die with thee, I do not deny thee; *sike kuikulunga taipain töräiginga senabi göiga sena, wara mabaeg igililinga*, if the Lord had not shortened those days, any man (would) not live; *tuma noi tarai mangisö a iman ngita a mata utui*, lest he come quick and find you still asleep; *noi iautumiz nongo niaikazi magina gulpa noinö ugan, inö mabaeg köigörsar, toma tana nubepa kai garönamis*, He ordered His disciples for a little boat to await Him, the men (were) many, lest they should crowd Him; *Nga mabaeg kain waina paieudan senabi au döpusa, tomaka papalamisö kas senabi döbu buiu*, what man pours new wine into an old thing, perhaps the old bottle will burst.

## (2.) *Tense* :—

Three apparent tense endings appear in the Gospel, but the distinction between them is difficult to make out. These endings are *pa*, *is*, and *n*.

(a) *Pa*.—This ending was given by Macgillivray for the present tense (see p. 145), but is of comparatively rare occurrence in the Gospel. Even when used it seems to express an infinitive of purpose

rather than a present tense, usually translating the Lifu infinitive sign *troa*. In the following examples there seems to be no indication of present time. *Getöwani mabaegöpa danalpataipa apö*, left men to look after the garden; *iautumizö senabi pasau danalpötai mabaeg, poipimipa*, ordered the man looking after the door, to watch (Lifu *troa hnekén*); *na ngulaig nabepa nidaipa*, she knew what was done to her; *aipa baropudäipa*, to buy food (Lifu, *troa itö xene*). This use of the suffix *pa* expresses the same idea as in the dative case of nouns.

In a few cases, the Gospel shows *pa* as a present tense ending. *Nongo niai kazi nubia pusipa*, His disciples follow Him; *mi za ngai iudepa?* what do I ask? *ngita danalpataipa a poipiam, a töitupagiz*, take ye heed, watch and pray. In these three examples the Lifu has in the first case the past, in the second the future, and in the third an imperative without tense sign.

(b) *Is, izö, izi*.—It is by no means certain that these suffixes are identical in meaning. Macgillivray refers to the ending *izzi* only once. In a note on the words *söka, sali*, he says:—"These two words appear to have the same meaning, but are used differently: '*sok'atchin = sali-missi*,' and both express 'having been sick.'" [II., 304.]

As used in the Gospel *z, zö, zi* usually express the present tense of an intransitive verb, and correspond to the particle *a* in the Lifu version. *Ngai ngibepa mulizö*, I say to thee (Lifu, *ini a qaja koi ö*); *noi iautumiz nongo niai kazi*, He orders His disciples; *noi kadaip waliz padapa*, he climbs up a mountain. The suffixes *iz, izö, izi*, do not always express a present tense. In many cases they are used to translate the Lifu past sign *hna*. *Durai siëi putizi iabugudanu*, some there fell on the path: *göiga palgizö*, the sun rose (Lifu, *hna hojë la jö*); *noi kadaitarizi*, he arose; *Iesu nubepa nagiz*, Jesus looked at him.

(c) *-n, -ni*.—The ending *n* was given by Macgillivray for the perfect tense. As used in the Gospel, it usually expresses the simple past of a transitive verb, and translates the Lifu past participle, *hna*, or the present perfect, *hë, ha*. *Noi minarpalan senabi tusi*, he wrote that book; *Tana nubepa angan setabi magina köziel*, they brought to Him little children; *noi iman senabi suke köisigal nisalnga*, he saw a fig-tree afar off having leaves.

Just as the suffixes *iz, izö, izi* are sometimes found expressing past tense, so also *n* is frequently used in the Gospels in the present tense. *Ngai iman mabaeg uzar*, I see men walking.

(d) There is another, and probably more correct view which may be taken of these three endings *pa*, *iz*, *n*. It is to regard them as suffixes of a similar nature to the Melanesian transitive endings, and indefinite in tense. Then *pa* simply states the action generally, *iz* states it as performed indefinitely, *n* as a transitive action performed upon some object. Compare *imaipa*, *imizi*, and *iman* in the following phrases:—*Noi danal wani mabaegpa imaipa*, he looked round to see the man (Lifu, *anganyideti a gos goeene troa xajawatine la ate*<sup>1</sup>; *tana imizi a iman senabi kula*, they looked and saw the stone (Lifu, *angate a goeene ame hna ohne la etc*). Cf. also, *Iesu noino geto ielpa*, a *nubepa kadai taran*, a *noi kadai taris*, Jesus took him by the hand and raised him, and he arose.

(e) *Perfect Tense.*

The verb *muasin*, meaning 'to finish,' is used with other verbs to express the completion of an action. *Ngita muasin karengemin*, ye have heard; *na muasin nidizi nanu ngulaig*, she has done what she could (lit., her ability); *noi muasin tanamulpa waean*, when he had sent; *noi muasin iamuliz*, as soon as he had spoken.

The meaning of the present perfect is often expressed by the adjectival ending *-nga*. *Kazi umanga*, the child is dead (Lifu, *meci he la nekö*).

(f) *Pluperfect.*

A kind of pluperfect is expressed by the termination *izinga*, which forms a verbal noun, and is used with the possessive pronoun. *Tanamun imazinga*, things they had seen, lit., their things seen. (See Nouns, § III., 1.)

(g) *Future.*

This tense is shown by the word *kai* (*ka*, *kae*), usually following the verb, but sometimes preceding. It is used with the root, or with the endings *pa*, *iz*, *n*. Cf. (d) above. *Mangi kai senabi tonare*, a time will come; *ngita iman kai mabaega kazi*, ye shall see the son of man; *kai noi mulepa*, he will say; *ngita kai toridiz*, ye shall receive. Macgillivray also gives examples. See p. 146. This *kai* must be distinguished from the *kai* or *ki* of emphasis. The verb *ladun*, to go, is also used to express the future. *Ngalpa ladun iman*, we are going to see. The Lifu future particle *tro* is also the verb 'to go.'

<sup>1</sup> This phrase is in the ceremonious language used to chiefs in Lifu.

(h) *Continuance.*

The word *mata* is used to translate the Lifu *pete kō*, while, and expresses the continuance of an action. *Tana mata wakaiasimoin*, while they mourned; *noidōka mata utuipa*, as he sowed; *tana mata iagiasin*, they were silent. Magillivray has *gul mata pongeipa* = the canoe is still under sail [II., 305].

(i) *Repetition.*

The word *lakō* expresses repetition. *Iesu lakō mangiz au Kapernauma*, Jesus again came to Capernaum; *ngai lakō ubinmepa danalpa-taipa*, I wish to open eyes again; *ngai lakō wōnigi*, I will not drink again.

(j) *Emphasis.*

A verb or verbal phrase is rendered emphatic by the word *kai*, at the end of the sentence: *Not mamu kai*, he was well. This is probably the same as the (x), Kowrarega *ki* of which Macgillivray remarks (II., 312):—"The meaning of this is, to a certain extent, doubtful; however, it enforces an affirmation; Ex. *ina muggi'ki* = this is *very* little: it is frequently used after pronouns; *arri ki kabapakai* = we shall go to the dance."

The Lifu *emphatic* particle *hi* is translated by *wa* = yes, verily. *Karengemin, wa karengemin a wakain-tamamoiginga*, hear, yes hear, and not understand. In Lifu: *troa deng, a denge hi, ngo tha trotrohnine pe*.

4. NUMBER.

A verb is used with a singular, dual or plural pronoun with the simple endings. *Ngai iamuliz*, I say; *palae iamuliz*, they two say; *tana iamuliz*, they say.

In some cases, especially when the pronoun or other method of marking number is not used, a syllable is inserted between the root and the verbal ending. The following examples are found in the Gospel:—

*Dual.*—*Nongo ukasar kaura palemān*, his two ears were opened; *ngipel sipalsei kai mangeman*, you two shall come; *palae uzarman*, two went. The usual forms of the verbs are *palan*, *mangiz*, and *uzar*, but the examples present some difficulty, and do not agree; the infixes being *em*, *ma*. The verbs *mangiz* and *uzar*, come and go, do not elsewhere appear with the suffix *n*.

*Plural.*—The plural appears to be distinguished by the infix *mōi*, *mai*, or *mi*. In Sharon's vocabulary, *patamōin* is given as the plural

of *patan*, to cut. Examples from the Gospel are :—*Ngalpa mulemipa*, we say ; *mura demoni nubepa iudemipa*, all the demons besought him ; *ngau ia idimöginga*, my words shall not pass away ; *durai patan pui-tamal a iabugudanu a poidamoin*, some cut branches, and spread on the road ; *mura mudö garoweidamoin*, all the crowd assembled.

Many words which naturally have a plural agent are rarely found except in the plural form, such as, *garoweidamoin*, to assemble together ; *gudamoin*, to discuss.

### 5. VERBAL PREFIXES.

The Saibai verb is rarely found in the Gospels or vocabularies (except in Macgillivray's) in a simple form. It mostly appears with a prefix, which, to some extent, serves the purpose of an adverb and defines the meaning. It is in some cases difficult to ascertain the exact meaning of the verb itself, or of its connection with the idea expressed by the prefix, but the meanings of the latter are in most cases clear. The prefixes may be conveniently classified as corporal, nominal, modal, and directive.

(1.) *Corporal Prefixes*.—These are names of parts of the body.

1. *Bag*, cheek ; *bag-taeen*, to promise.
2. *Dan*, *dana*, eye ; *dan-paliz*, to open the eyes, be awake (eye-divide) ; *danal-pataipa*, to watch (put out eyes) ; *dan-taeen*, to exhort (roll or throw eyes).
3. *Gamu*, body ; *gamu-diwapapa*, dance ; *gamu-doidanu*, tired (body in wilderness) ; *gamuia-mataman*, to murder ; *gamu-tariz*, to touch.
4. *Get*, *geta*, *getö*, hand ; *getö-nitun*, to point ; *getö-pagaeen*, to apprehend ; *getö-waeen*, to loose, let go ; *getö-pudeipa*, to scrape hands, etc.
5. *Gud*, *guda*, *gudö*, mouth ; *guda-moin*, to discuss ; *guda-palamiz*, to overflow ; *guda-purutan*, to be insolent (eat-mouth) ; *gudö-nitun*, to advise ; *gudö-tapaman*, to kiss.
6. *Kakura*, *kuku*, foot, toes ; *kakura-pataean*, to step across ; *kukuna-mapeipa*, to kick.
7. *Kuikö*, *kuiku*, head ; *kuiku-iman*, to begin (find head) ; *kuikö-patan*, to behead ; *kuikö-taeen*, to nod, etc.
8. *Madu*, flesh ; *madu-paman*, to start, be afraid.
9. *Ngöna*, breath, heart ; *ngöna-pudiz*, to take a long breath, to rest ; *ngonamu-mani*, to remember (bring into the heart).

10. *Paru*, forehead, face; *paru-idun*, to deceive.
11. *Sibu*, liver; *sibu-wanan*, to pity (perhaps "cheer up") (put a liver); *sibö-papalamiz*, to doubt (liver flies away). The liver is probably regarded as the seat of courage.
12. *Tabai*, shoulder; *tabal-uradiz*, to carry on the shoulders.

(2.) *Nominal prefixes* are names of objects, and are not so easily distinguished as the preceding.

1. *Barö*, grass; *barö-pudaipa*, to buy (i.e. barter, put down on the grass); cf. *za-pudamoin*, to sell (put down a thing).
2. *Bupö*, the bush; *bup-ariz*, to flee (run to bush).
3. *Butu*, sand; *butu-pataipa*, to cleanse; *butu-paliz*, to shake off.
4. *Guba*, wind; *gubal-puian*, to blow.
5. *Gud*, opening (see mouth); *gud-paliz*, to bud.
6. *Ia*, *iadu*, word; *ia-muliz*, to say; *iadu-palgan*, to confess; *iadu-turizö*, to inform; *ia-kaman*, to inform; *ia-utumisi*, to command. Most verbs expressing the saying of something take this prefix.
7. *Sup*, covering; *sup-nuran*, to cover (*nuran*, to wrap).

(3.) *Modal prefixes*.—These mostly describe the manner of the action expressed by the verb, and might almost be classed with the directives.

1. *Dada*, in the middle, between; *dada-mangiz*, to meet (come in middle).
2. *Garö*, together; *garö-guimani*, to shake, quiver, earthquake; *garö-pataman*, to collect food; *garö-taeen*, to press; *garö-nanamiz*, to crowd; *garö-weidamoin*, to assemble.
3. *Kidö*, over; *kidö-taeen*, to turn over, overthrow.
4. *Kun*, back; *kunia-tidiz*, to return.
5. *Pa*, motion; *pa-töridiz*, to carry along; *pa-iolpan*, to lead along; *pa-ioudiz*, to pour; *pa-waliz*, to land, climb on shore; *pa-taeen*, to throw; *pa-zilamiz*, to move against, to attack; *pa-nudiz*, to press, rub along, etc. Nearly all verbs of motion begin with *pa*, and it is also used with the directives. Cf. also the dative suffix and verbal ending *pa*.
6. *Pal*, double (cf. dual demons); *tu-pal-taan*, to fold (*tu* = English *two*).

(4.) *Directives*.—These are often combined with the prefix of motion, *pa*.

1. *Ngapa*, hither (cf. prons. *nga-i*, I; *nga*, who?); *ngapa-usar*, come hither; *ngapa-mani*, bring hither; *ngapa-nagemiu*, look hither. Macgillivray has the following note upon *ngapa*:—

“*Ngāpa*.—This is a word which, from the variety of its modes of application, long puzzled me. Careful examination of sentences in which it occurred led to the following results:—1st. It may be used as an independent word to denote motion towards the speaker, the pronoun which would otherwise be required being omitted. Example: ‘*adur* = go out,’ but ‘*ngap’ adur* = come out (towards the speaker),’ ‘*lak’ ngapa* = to come again, to return.’ 2nd. It is also used as a postfix to denote motion towards the object to which it is joined. Example: ‘*laga’ p’ (ngapa) aigewel* = come to the hut,’ ‘*mu’ pa teir* = throw it into the fire.’ 3rd. It is used in a third sense. Example: ‘*waupi’ pa* = to go fishing,’ ‘*kaba’ pa* = to go to a dance. 4th. It is often used as an equivalent to ‘give me,’ the hand being held out at the same time. Example: ‘*ngapa* = let it come to me.’” [II., 308].

The first of these uses is the directive; the second the dative; the third the verbal suffix.

2. *Ada*, *adapa*, thither, outward; *ada-taen*, *adapa-taen*, to throw away; *ada-pudiz*, high (to be out beyond something else); *adapuidan*, to eject; *adapa-mani*, to take away; *adapakadaman*, to peel, to tear away. Cf. *Mir. ade*, outside.
3. *Kadai*, *kadaipa*, up; *kadai-tariz*, to stand up; *kadai-nagiz*, to look up; *kadaipa-waliz*, to climb up. Cf. *Mir. kotor*, up, sky.
4. *Apa*, down; *apa taen*, to throw down; *apa-tanu*, to sit down; *apa-sin*, to stoop; *apa-nian*, to sit on the ground.
5. *Mulpa*, down; *mulpa-pōgamiz*, to descend.

6. *Nguro*, out; *nguro-tasan*, to keep out; *nguro-weidan*, to cast out.

7. *Siga*, afar; *siga-tasan*, to convulse (throw afar).

There are apparently many other similar verbal prefixes of which the meanings are not clearly made out. See words beginning with *toi* (*toitu-pagaipa*, *garo-toi-tasan*), *wakai*, *ngoro*, and *giu* in the Saibai Vocabulary.

#### 6. VERBAL SUFFIXES.

These do not appear so prominently as in Miriam. Besides those already noted (*pa*, *iz*, *n*, *izinga*, etc.) there are found the endings *ilamiz*, *nani*, *mizin*, *asin*, *ae*, and *ai*.

1. *Ilamiz* has a verbal form and means 'against'; *muliz-ilamiz*, to accuse (speak against); *pa-silamiz*, to attack (move against); *ngurs-ilamiz*, to wink (prob. from *nurse*. See Voc.).

2. *Mani* means give, bring, take, etc., and has been already noted. Cf. *meipa*.

3. *Mizin* appears to be connected in meaning with *nani* and *meipa*.

4. *Asin* means to be with, and has a plural, *asimoin*, and negatives, *asinginga*, and *asigi*.

5. *Ae*. *Ngoi korawaigae*, we cannot tell, we don't know! This is almost equivalent to an exclamation. Cf. the vocative suffix *ae*.

6. *Ai*. *Ba poibanai*, for it shall be given. Mark, iv. 25.

9. Peculiar phrases used to supply the place of verbs are:—*Mai adan*, weep, put out tears; *mai mani*, make tears, mourn; *ipidadö pugan*, blaspheme; *igili palan*, to save life; *walmizin*, to shout, make a coo-ey; *apa niain ngönamani*, to meditate, sit on ground to think; *tanamun mari adapa katö palagizö akan*, they were amazed, their spirit flew out of (their) neck with fear; *tana mekenmepa mabaeg tanamulpa amasan*, they love salutations, they like men to crawl to them.

#### § VI.—*Adverbs*.

1. INTERROGATIVE.—Interrogative adverbs are formed by means of the cases of *miei*, *midö* (see Interrog. Prons. p. 131) or by prefixing *mi* to nouns.



(a) *Place*.—*Milagnu*? (in what place) where? *Nagö, naga* (s), *nager* (м), where? *Nagö mi ngadalnga*? where (is) the likeness? *Nalaga*? (what place) where? *nalaga a ngöi butupatan*? where (is) thy wish that we prepare? *Nalagazi*? (from what place) whence? *Nalagazi pa adan senabi sagetö ina nubia*? from whence has this man these things?

(b) *Time*.—*Migöiga*? (what day) when? *Mi tonar*? (what sign) when?<sup>1</sup> *Mi tonar mangiz senabi pawa ina*? *mi tonar minaipataman senabi mura sasei*? When shall these doings come? what sign shows all these things? *Namoit*? when? (Macfarlane). How long? is translated by *kurusipa midö*? till what? or by *mibuta*? *Ngai ngitamulpa baminadan kurusipa midö*? How long shall I suffer you? *Mibuta nubepa mangiz*? How long since (it) came to him?

(c) *Cause*.—*Mipa*? (for what) why? *Mipa nidiz sena*? why do that? *Mipa ngita nukunukö pöibiz*? why make ye this ado? *Mingu*? (through what) why? *Mingu ngita ngöna nutan*? why do you tempt me? *Minguzö*? (through what things) why? *Minguzö senabi maikuikö a luman inabi tonar*? why does this generation seek a sign?

(d) *Manner*.—*Midö-paru*? (what appearance) how? *Midö paru ngöi korawaig nubepa nguroweidan*? How (was it) we could not cast him out? *Mingadalnga*? (what like) how? *Ngalpa mi ngadalnga nubepa minaman*? we shall measure it how?

(e) *Number*.—*Mida kubi*? how many? (*lit.* what many) is given by Macgillivray, but no examples of its use is found in the Gospel, which has *midö* only. *Areto midö siei ngitamunia*? how many loaves have you? *Iana midö gudia-ieudiz*? how many baskets full?

2. *PLACE*.—*Inö, ina*, here; *sei, siei*, there; *sena, senao*, that there; *bradar* (B) here; *mata launga*, not here; *gurugui*, around; *worgi, wörögi*, on, upon; *mulpa, malupa* (м), downward, below, *lit.* to sea; *nakäreipa* (м), upward, above; *kulaikulai*, before; *kapitaig* (м), a long way off; *amadan*, near.

Adverbs denoting positions are mostly formed from nouns by the suffix *l* or *lö*. Cf. Adjectives. *Adal*, on the outside, away, off; *apal, apalö*, on the ground, down, under, below; *dadal*, in the middle;

<sup>1</sup> The natives regulate their occupations during the various seasons of the year by the constellations, which are thus signs (Saib. *tonar*; Mir. *mek*) of the seasons. See vol. II., p. 548.

*matadödalö* (B), inland; *gimal*, on the top, over, above; *sigal*, at a distance; *wagel*, last. *Sigal* is declined in dat. and abl. *sigapa*, to a distance; *sigasi*, from a distance. The word *kö*, meaning the place close by, is declined like *sigal*: *kopa*, to a little distance; *kosi*, from a little distance; *köu*, of a little distance.

Example: *Iesu Köpa amadan uzar*, Jesus went forward a little; *noi kosi gurugui uzar*, he had gone a little further on; *kösi kain göiga palagisö*, a little after new sun rose; *ita köu nitaman*, sit hereabouts. Macgillivray has *käreki*, hereabouts. *Siëi* is\*also declined; *siëiki*, from there.

Emphasis is given to adverbs of place and time by prefixing *köi* (*kai*, *kei*) great, very; *köi-sigal*, very far, etc. Examples occur in all the authorities, and Macgillivray uses also *kara* with the same meaning; *karamalupa*, a long way down, far below.

3. TIME.—*Nabi*, now, at present; *nabi-göiga*, to-day; *mata-döbura*, immediately; *kaibö*, *kaibu*, now, soon, to-day; *kulu kubö*, anywhilst; *tumatuma*, by-and-by, presently; *batainga*, in the morning; *bangal*, to-morrow; *matabangal* (M), a week or so hence; *ngul*, *ngulö*, yesterday; *war-gaiga* (B) (other day) yesterday; *kul*, two or three days ago; *matakul*, a week or two ago; *körökida*, a long time ago; *muasin*, after; *lakö*, again; *mata*, continually, still, yet; *ngaru*, ever, always.

4. MANNER.—*Köi*, *kai*, *kei*, very; *lakö*, more; *mata*, only; *mamu*, carefully; *samidö*, really; *tomaka*, perhaps; *purks* (M), well, etc.; *kasa*, just, only (cf. *kusaig* and Mir. *no*); *kasa-kupal*, just a body, naked; *kasa-tabu*, only a snake, i.e., a harmless one; *kasa wanan*, forsake, leave alone; *nainonibe*, separately.

5. Some adverbs have a reduplicated form. *Ikalikal*, gladly; *moilmoil*, sadly; *kulaikulai*, before; *tumatuma*, by-and-by.

## § VII.—*Postpositions and Local Nouns.*

These take the place of the English prepositions.

1. The postpositions used as suffixes to nouns and pronouns are: *u*, *n*, *mun*, of; *pa*, *lpa*, *mulpa*, to, for; *ngu*, *mulngu*, from through, concerning; *nu*, at, on, in; *dö*, *du*, by, by means of; *ia*, *bia*, *munia*, with; *le*, possessed of; *igi*, *gi*, without.

The use of these words has been fully illustrated in the sections on pronouns, nouns, and adjectives.

*Ki*, to, for; and *zi*, from, are only added to demonstratives, and then form adverbs or conjunctions.

Macfarlane gives *mani* as a suffix, meaning by, but there are no examples of its use.

2. Some nouns are used with postpositions to express relations of place. These are *paru*, forehead or face; *ada*, outside; *mui*, inside; *buadö*, side; *gima*, top; *kalö*, back.

They appear as *parunu*, before; *paruia*, opposite to, contrary; *adapa*, out of; *muinu*, inside, within; *muia*, into; *buadia*, beside; *malu buadia*, by the sea-side; *gimainu*, over, above; *gimaingu*, from above; *gimia*, on the top; *kalanu*, after, behind; *kalapa*, to, behind.

The word *mai* with the genitive case is the equivalent of the Miriam *kes*, 'sake.' *Herodian mai*, for the sake of Herodias; *kedazöu mai*, for the sake of that thing; *mepaiangu mai*, for the world's sake; *ngau mai*, my sake.

The verb *asimpa*, *asin*, plural *asimoin*, neg. *asigi* is used with the meaning 'be with.'

With, referring to persons, is translated by a noun *kalmel*. *Wara ngau kalmel ai purutan*, one eating food with me, lit. one my companion eating food; *ngai ngibia kalmel umanga*, I die with thee.

A few other words are given as prepositions in the vocabulary, but they are mostly compounds such as *nungu*, from (from it).

### § VIII.—Conjunctions.

1. *A*, and, also, but; *ba*, for, and if; *mata*, but, for; *sike*, if; *tuma*, till, until; *tomaka*, perhaps; *kurusipa*, until.

Macgillivray gives *ia*, and, with an example: *Uleip' Aburdia, Salalallia, Wagelia, Mania* = *Aburde* and *Salalle* and *Wagel* and *Manu* are approaching.—[II., 306.] Cf. this *ia* with the ergative suffix.

2. The word *keda*, like, thus, with the noun *sö*, thing, is declined to form causal conjunctions. *Kedazöu*, for; *kedazöpa*, therefore; *kedazingu*, *kedazöngu*, *kedazinguzö*, therefore, because.

### § IX.—Exclamations.

1. *Ua!* *wa!* yea! yes! *Misai!* yes! *Samido!* yes! *Wagar!* yes! *Guire!* (M) no! *Ae!* ah! (of sorrow). *Au!* *akamis!* oh! (of surprise). *Igur!* poor thing!

2. The salutations are: *Iawa!* good-bye! farewell! *Sangopa!* good morning! The latter is perhaps a corruption of the Samoan *alofo*.

Similar expressions are: *Kami!* (♂) *kōmi!* (♀) my dear! I say! look here! (said by a female to a male). *Kawki!* (♂) *kiki!* (♀) with the same meaning are said by a male to a female. *Bedgi!* (♂) a call to a blind person. *Maige!* (♂) *maigi!* (s. b) *wan-nur!* (♂) don't! *Sina!* *china!* (♂) stop! enough! *Tuma!* (b) wait a bit! *Aio!* come!

3. The vocatives *ama!* and *baba!* have been noticed in the section on nouns.

### § X.—*Syntax*.

The following are the chief syntactical rules:—

1. The Subject precedes the verb. *Gōiga putizō*, the sun sets.  
2. The Direct Object follows the subject and precedes the verb. *Tana arakato putran*, they cut a hole.

3. The Indirect Object often follows the verb. *Iesu iamuliz tanamulpa*.

4. Adjectives and possessives precede the noun. *Kain dumawaku*, new garment; *ngau kasi*, my son; *lagōu kala*, house's back; *ngimu watri pawa*, thy evil deeds.

5. The adverb precedes the verb. *Iesu mamu iman*, Jesus carefully looked; *tana muasin putra*, after they had cut.

6. *Government of Verbs*.—There is a great variety in the cases used with verbs, depending apparently upon the nature of the action expressed by the verb. An examination of the commonest words in the Gospel show them governing cases as follows:—

(a) With *accusative* or no case ending, when the verb expresses the direct action of one thing upon another. Examples—baptise, behold, cast out, cleanse, confess, cut, do, drink, eat, forgive, make, pour, preach, prepare, send, take.

(b) With *dative* when action of one thing influences or is directed towards another. Examples—ask, believe, betray, blaspheme, call, come to, convulse, fear (for), give, have dealings with, inform, kneel to, know, lead, minister to, pity, punish, rebuke, say, see, seek, send, show, teach, tell, tempt, testify, throng, watch.

(c) With *ablative* when the action arises from the influence of another. Examples—fear (arising from something), issue.

(d) With *ergative*, when subject and object are both affected in the same way. Examples—enter (*utis*, Macgillivray *utipa*, approach), follow (go when something else goes), touch (two things come in contact).

### § XI.—Numerals and Measures.

1. The Numeral system of the Western tribe of Torres Straits islanders, collectively called in this Study the Saibai, has been very fully discussed in the Ethnography. (See Journ. Anthropological Institute, vol. xix., 1890, pp. 303–306.) What follows is mainly a reprint of that notice, with some additions from the Gospel.

Throughout the Western islands of Torres Straits there were practically but two numerals, *urapun* and *ōkōsā*, which are, respectively, one and two. Three is *okosa urapon*, four is *okosa okosa*, five is *okosa okosa urapon*, six is *okosa okosa okosa*, beyond that they usually say *ras*, or “a lot.”

There is a decided tendency to count by twos or couples.

The following Table shows the variations in the numerals as they appear in the various vocabularies:—

1. <i>wārdpūne</i> , . . . . .	} Kowrarega ( <i>sic</i> ). Macgillivray [II. p. 301].
2. <i>quassur</i> , . . . . .	
3. <i>ūquassur-wārdpūne</i> , . . . . .	

1. <i>warabon</i> , . . . . .	} The Western tribe as a whole. Wyatt Gill [p. 225].
2. <i>augosa</i> , . . . . .	
3. <i>warabon-augosa</i> , . . . . .	

1. <i>warapon</i> , . . . . .	} Masig. D'Albertis [II. p. 387].
2. <i>ukesar</i> , . . . . .	
3. <i>ukesar-warapon</i> , . . . . .	

1. <i>urapon</i> , . . . . .	} Masig. Stone [p. 252].
2. <i>kusa</i> , . . . . .	
3. <i>kusa urapun</i> , . . . . .	

1. <i>wara, urapon</i> , . . . . .	} Saibai. Sharon ms.
2. <i>uka</i> , . . . . .	

1. <i>urapon</i> , . . . . .	}	Saibai. Macfarlane ms.
2. <i>ukasar</i> , . . . . .		
3. <i>uka-modobigal</i> , . . . . .		
4. <i>ukasar-ukasar</i> , . . . . .		
<hr/>		
1. <i>wara, urapon</i> , . . . . .	}	Gospel.
2. <i>ukasar</i> , . . . . .		
3. <i>ukamodobigal</i> , . . . . .		
4. <i>uka-uka</i> , . . . . .		
<hr/>		
1. <i>öröpun, orapuni, urapun</i> , . . . . .	}	Moa, Badu, Mabuiag, Nagir, and Tud. [A.C.H.].
2. <i>ökösä</i> , . . . . .		
3. <i>ökösä öröpun</i> , . . . . .		
<hr/>		
1. <i>wurapu</i> , . . . . .	}	Tud. Curr [I. p. 684.]
2. <i>okasara</i> , . . . . .		
3. <i>okasara-wurapu</i> , . . . . .		
<hr/>		
1. <i>üräpüni, öräpuni</i> , . . . . .	}	Muralug. [A.C.H.].
2. <i>ukösa, ökösä</i> , . . . . .		
3. <i>bädägili</i> , . . . . .		

One hand, *urapuni-getal*, probably stood for five objects, and two hands, *okosa getal*, for ten, but it is doubtful whether ten would be recognised as being composed of five twos, i.e., *okosa, okosa, okosa, okosa, okosa*. A Badu and a Moa man both gave *wägetäl wägetäl* for ten.

In Muralug *bädägili* suggests that they originally counted up to three, probably through Australian influence.<sup>1</sup> The word *badagili* is a derivative from *bagadi*, perhaps meaning all or both (the other numbers). *Badaginga*, another derivative from the same root, is used in the Gospel for "whole, entire."<sup>2</sup>

<sup>1</sup> The following are some examples of Australian numerals:—

West Australia,	1. <i>gain</i> .	2. <i>gudjal</i> .	3. <i>warhrang</i> .
Gudang (Macgillivray),	1. <i>epümana</i> .	2. <i>oläbäiu</i> .	3. <i>dama</i> .
Cape York (W. W. Gill),	1. <i>pirman</i> .	2. <i>labai</i> .	3. <i>ilanamina</i> .
Raffles Bay,	1. <i>loca</i> .	2. <i>orica</i> .	3. <i>orongarie</i> .
Moreton Bay,	1. <i>kamarah</i> .	2. <i>bulia</i> .	3. <i>mudyan</i> .
Lake Macquarie,	1. <i>wakol</i> .	2. <i>buloara</i> .	3. <i>ngoro</i> .

<sup>2</sup> *Badagi* itself may be a derivative from a root *böda*, which appears in *böda-dogam*, the left (i.e., the other) side. *Bodagi* would thus mean "not the others" (i.e., first and second fingers) or the remaining three.

There was also obtained at Muralug *ina nabigēt* (this here hand), or *nabiget* (this hand) for five; *nabiget nabiget* for ten; *nabikoku* (this foot), for fifteen; and *nabikoku nabikoku* for twenty. *Nabiget* can hardly be said to be the name of the number five, but that there were as many of the objects referred to as there are fingers on one hand.<sup>1</sup> In the same island *maura* was given for 100 (probably *mura* "all"), and *kaigasa* for 1000 (*kōi görsar*, a great many), but these are not true numerals.

The words *wara*, *uka* which appear in the Saibai ms. and in the Gospel for one, two, are probably the root forms of the numerals. *Wara* is also used for other, a certain, in the Gospels, and *uka* appears as a verb, *ukamoin*, to double. *Uka-modobigal*, used for three in the Gospel is also formed from *uka*. *Modobigal* means "the fellow which makes up (three)" from the verb *modobia*, to answer, pay, i.e. give in return, and the noun *igal*. Cf. Daubai *modobe*, to make up.

The demonstratives *ino* (singular), *ipāl* (dual), and *ita* (plural), are sometimes used with one, two, and three. One Muralug informant gave 1 = *ino urapuni* (this one), 2 = *ipāl ukosa* (those two), 3 = *ita badagili* (those not the other two), 4 = *ipāl ukosa ukosa*, 5 = *ipāl ukosa ino urapuni*, and 6 = *ipāl ukosa ukosa ukosa* or *wara badagili*.

Counting is usually performed on the fingers, beginning with the little finger of the left hand. This was probably the original method. There was also a system of counting on the body by commencing at the little finger of the left hand, *kotodimura*, then following on with the fourth finger, *kotodimura gorngosinga* (or *guruzinga*); middle finger, *il get*; index finger, *klak-nētōi-get* (spear-throwing finger); thumb, *kabaget* (paddle-finger); wrist, *perta* or *tiap*; elbow joint, *kudu*; shoulder, *zugu kwoik*; left nipple, *susu madu* (breast-flesh); sternum, *kosa*, *dadir*; right nipple, *susu madu*, and ending with the little finger of the right hand. (These names were obtained at Mabuiag; those used in Tud and Muralug are somewhat different).<sup>2</sup> This gives nineteen enumerations, of which eleven to nineteen are merely inverse

<sup>1</sup> These are suggestive of the Lifu vigesimal system, and are, perhaps, imitations of it.

<sup>2</sup> Macfarlane's ms. gives a similar list for Saibai:—1. *urapon*; 2. *wardadim* (other finger); 3. *dadadim* (middle finger); 4. *kalakōnitu*, spear thrower; 5. *kukū-dimō*, chief finger or thumb; 6. *perta*, wrist; 7. *kudu* (elbow); 8. *zugu*, shoulder; 9. *susu*, breast; 10. *kabu*, back; 12. *wadegam zugu*, shoulder on the other side.

repetitions of one to nine. The names are simply those of parts of the body themselves, and are not numerals.<sup>1</sup>

An unexplained word *laelō* is used with numerals in Mk. vi. 7. See Vocabulary.

This system could only have been used as an aid to counting, like using a knotted string, and not as a series of actual numbers. In a question of trade a man would remember how far along his person a former number of articles extended, and by beginning again on the left little finger he could recover the actual number.

Only the old men are acquainted with this method of enumeration, and it is now superseded by the European system.

All the numerals now in use are borrowed from the English. Simple arithmetic is taught in the Mission Schools, and the ciphers are all introduced.

#### <sup>1</sup> SEASONS.

“There was no division of the year into months or days, and the years were never counted. Time was usually reckoned by suns or days, and by moons or months.”—(*Ethnography*, p. 303.)

The year *wato* is divided into two seasons—*aibu*, the period of the south-east winds, and *kuki*, the season of the north-west monsoons. Macgillivray gives *aibow*, summer or dry season; *kuki*, winter or rainy season. With regard to other seasons there is some uncertainty, and, perhaps, a confusion of names. Macfarlane gives *kuki*, spring; and *buti*, autumn, as divisions of the year *saziwaur*. In the Gospel (Mark, xiii. 18) winter is translated *aigi tonar*, foodless time; summer (Mark, xiii. 28) is *dōkal natizō*; and harvest, *burugomel* (Mark, iv. 29). Macgillivray gives also *malgui* (i.e. growing) as spring and autumn, and

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<sup>1</sup> A similar system of counting is found in parts of New Guinea. Chalmers' "Pioneering in New Guinea," p. 75, gives fourteen numerals of Kaevakuku Elema as follows:—1. *harohapo*, small finger of left hand; 2. *orahoka*, next finger; 3. *irohiho*, middle finger; 4. *hari*, fore finger; 5. *hue*, thumb; 6. *ukōva*, wrist; 7. *para*, fore arm; 8. *ari*, elbow; 9. *kae*, upper arm; 10. *hero*, shoulder; 11. *korave*, neck; 12. *avaku*, ear; 13. *ubuhai*, eye; 14. *wira*, nose. It is then continued down the right side to the small finger of the right hand. Also in describing the Orolo (Elema country) counting he says:—"In counting they begin with the small finger on the left hand and go up to the arm—by the neck, ear, eye, and nose—to the other side, then down the right arm, ending at the small finger thereof." ("Work and Adventure," p. 163).



*sulangi*, the turtling season. “*Surlangi*, the season when the turtle is ‘fast’ (i.e. copulating); this, at Cape York, usually extends from about the middle of October until the end of November, but the limits are not constant.”—(*Ethnography*, p. 350.)

The times at which certain constellations (*Dorgai*) appeared were noted, and these became the *tonar* or signs for particular dances or occupations. Thus in Tud, the star *Kerherki*, which appeared when food was ripe, became the sign for the dancing of the *kap garig* (see *Ethnography*, pp. 303, 365). The *Dorgai waralaig* was one of the constellations of *Aibu* (*Legends*, i., p. 31), while the *Dorgai kukilaig*, and *Bu*, the Pleiades, appeared at the dancing season in *kuki* (l. c., p. 31).

#### POINTS OF THE COMPASS.

As in Miriam, these only approximately correspond to the European terms, and are named from the prevailing winds. The authorities often differ, and some of the words are probably descriptive of the position of the speaker rather than true names. We have found the following words:—

N., *Naigai*, *Nangap*, *Naida-dögam* (north side). This is probably the Miriam *Naiger*.

N.-W. wind, *Kuki*. Mac Gregor gives *Nukagnabaguba*.

S., *Je* (Mac Gregor); (*Pin*)*nangap*, *Zadogam* (Macfarlane).

S.-E. wind, *Waura*, *Aibu*.

E., *Palagiz* (rising), *Poipetegam* (look out side), *Waradogam* (other side). Macfarlane also gives *Pinapai*.

E. wind, *Waura*.

W., *Gaiga pudizo* (sun sets), *Wagedegam* (behind side), *Kukidögam* (side of west wind),

W. wind, *Kuki*. (Mac Gregor).

IX.—SPECIMENS OF THE SAIBAI LANGUAGE.

1. THE HEALING OF THE LEPER.

(*Mark*, i. 40–45.)

40. Wara lepera nubepa uzar, a mulpa patritiz nubepa a iamuliz keda, nginanga sike ubinemepa, ngulaig ngöna butupatan göugan aima.

41. Iesu nubepa wakaeasin, a noi getö pagaeen a nubia nidiz, a iamuliz keda, Ngai ubimepa ngi mamu.

42. Noi muasin iamuliz mata döbura adapamizin nongo lepera, a mina ngadalenga.

43. Iesu koima gudö wadan nubepa a waeen nubepa, a iamuliz nubepa keda.

44. Wara mabaegöpa mulaigi, wa uzar, ngibepa iakman wakaia uiamai mabaeg, a poiban Mose nanga ia utumiz tana mulpa tonar tritran ngi wara ngadalngange.

45. A noi uzar, kuikaiman koima maumizin, a garouian senabi ia, keda zingo noi kora waig uzar senabi lagö; noi iawaig siëi mabagi lago, tana nainanope uzar nubepa siëiki.

2. THE SOWER.

(*Mark*, iv. 3–9.)

3. Ngita karengemiziu, ngapanagemiu, ngapa uzar senabi wara mabaeg utun a utun.

4. A noidö ka mata utuipa, durai siëi putizi iabugudanu, ngapa mangizö urui palgizö a purutamoin.

5. Durai gimal mukö putizi ina magina baradar, mata döbura malegui-adan, pepe baradarangu.

6. A goiga palgizö, baradar koamasin, a kainga, wa ramoginga.

7. Durai tutizi pui patralai dadal, kadaipa malegui adan pui pratralinge a apapa ngurötaeamoin, a köusagimael.

8. Durai putizi ina mina baradaranu, a tarötaiz, a sirisiri, a köusalinge; a köusa aidanga thörte nainonop a sikiste, a wan handed.

9. Noi iamuliz tana mulpa keda, mi mabaeg kaura aidanga, noi karengemin.

## 3. THE WICKED HUSBANDMEN.

(Mark, xii. 1-9.)

1. Iesu lakö kuika iman tana mulpa iamuliz ia mina matangadagid, keda, wara mabaeg vineu Apö söwagai a papagan, apö kuikö mamu nanitan, a möidan senabi lago apau danal patai lagö, getö wani mabaegöpa danal pataipa apö, a uzar köisigapa.

2. A aingu tonar, noi waeen wara niai kazi tana mulpa siwagöiu mabaegöpa, a durai vine kousa mani.

3. Tana ki nubepa gasaman, a nubepa mataman, a nguro weidan, a noi iaginga.

4. Noi waeen wara niai kazi tana mulpa; tana nubepa kula taean kuikupa papölamöipa a nubepa ngurö weidan getö langaizinga.

5. Noi waeen wara, tana nubepa uma mataman; a durai koigörsar, a durai mataman a durai uma mataman.

6. Mata siëi nubia nöidail kazi, noidö noino waeen tana mulpa, a iamuliz keda, Tana ngau kazipa akan.

7. Tana söwakaiu mabaeg ia uman sei, keda, Butapa ina ngalpa nubepa mataman, a nongo za ngalpan zapul.

8. Tana nubepa gasaman, a uma mataman, a vine apangu adataean.

9. Kuikulumai vine apangu miëi mani? a noi mangizo tana mulpa söwaki lagöpa mataman, a vineu ap; wara mabaeg pange turan.

## 4. THE LAST PASSEVER, BETRAYAL AND TRIAL OF CHRIST.

(Mark, xiv. 1-72.)

1. Muasin ukasar goiga ina paseka, senabi areto levene ginga; tanamun köi görköziu wakaea uiamoin, a tana minarpölai mabaeg tana luman wara iabugud noinö gasaman senabi paruidan, a noinö uma matan.

2. Tana iamuliz, keda, Maigi senabi ta mura mabaegongu silamai-lai.

3. Iesu Bethanianu apatanori senabi Simonan lagö ina lepera; noi apatanori a aipurutan, wara ipökazi böi mangizö binibini laig alabasa muinu muro mina za; na muasin papalamöin senabi binibin alapasa, na paieudan nongo kuikunu.

4. Durai mabaeg tabukiri, a iamuliz, keda, mipa kasa pa ieudan senabi muro?

5. Sike muasin, zabutamöin sena, ukamodobigal magina ina handede, senabi denari modobia zagi mabaegöpa poiiban tana nabepa tabukiri.

6. Iesu iamuliz, keda, maigi nabepa tabukiri; mipa ngita nabepa ipi dadö mani? kapu za getö ina nadö ngaepa mani.

7. Mata sena ngita munia zagi mabaeg, ngita ngulaigö nidizi kapu zagetö tana mulpa senabi tonar ngita ubin meamaipa; ngai ngaru niainginga ngita munia, inö.

8. Na muasin nidizi nanu ngulaig; na sulan ugau gamunu a zamiak ngaepa maramatöiaipa.

9. Mina ngai ngita mulpa iamuliz, keda, senabi lagö mura ina apal maumizin ina evangelia sena iadu palgan senabi nanu zagetö, nabepa ngöna numani.

10. Wara tuelv kuiku mabaeg nel, Iuda Isakariota, a uzar köi garekaziu wakauiamoin, noidö noino gударан tana mulpa.

11. Tana karengemin, tana ikatiaipa a tana nubepa puzariz a mani nubepa poiiban. Noi iabu luman a Iesun gударан.

12. Senabi kulai göiga ina areto levene ginga, senabi tonar urui mataman a pasekapa wakaia uiamoin, nongö niai kazi iamuliz nubepa keda, Nginu ubin mai nalaga, a ngöi butupatan a ngi purutan senabi paseka?

13. Noi waeen ukasar nongo niai kazi, a iamuliz pala mulpa, keda, ngipel uzar senabi lagapa, a ngipel dadamangiz wara mabaigia a buiu ngukulnga patra uradiz; a nubepa peltaean;

14. Senau noi muia utiz, iamuliz lagau lagöpa, Ngurupai mabaeg, keda, nalagi azazi mabaeg, senabi ngai pasekanu purutan a ngau nia kazi?

15. Noidö sesitaman ngipelpa wara köi ngabad gimal, poidamoi-zinga a butupataizinga, kapuza moidemin, ngoi mulpa siei.

16. Senabi nongo niai kazi palae uzareman, a mangeman senabi lagönu, a iman keda noi nanga midö pala mulpa iamuliz, palae butupatan senabi paseka.

17. A kutrapa, Iesu mangizö kalmel tuelv mabaeg.

18. Tana apa nitaman aipa purutaipa, Iesu iamuliz, keda, Mina ngai ngita mulpa iamuliz, keda wara ngau kalmel ai purutan ngona gударан.

19. Tana kuika iman watri wakasin, a iananab nubepa iamuliz, keda, Midö ngai? wara keda, midö ngai?

20. Iesu modobia iamuliz tana mulpa keda, Wara tana mun tuelv mabaegangu, senabi mabaeg ngau kalmel ai pagan senabi peleit.

21. Kapuza senabi mabaegöu kazi keda ngadalnga minarpalan nubepa, ngau kupalenga senabi mabaeg inö mabaegau kazi gudarana, sike kazi mani ainginga wa noi mamu.

22. Tana purutan, Iesu areto mani, a eso, a maginu mani, a tana mulpa poiban, a iamuliz, keda, mani, purutan, senabi ngau gamu.

23. Noi mani senabi ngukiai, a eso, a tana mulpa poiban, a tana mura waniman.

24. Iesu iamuliz tana mulpa, keda, Ngau kuluka ina kain ia utumiz paieudan tana mulpa mura mabaegöpa.

25. Mina ngai ngita mulpa iamuliz, keda, ngai lakö wönigi senabi vinau köusangu kurusipa inabi göiga ngai lakö nungu ngu wanizö kain senabi Augadeu baselaia.

26. Tana muasin na poidan wara na. Tana uzar senabi padö Elaio.

27. Iesu iamuliz tana mulpa, keda, Ngita mura getöwanizö ngaunguzö nabi kubi kubilö ina, muasin minar palan, keda, Ngai mataman mamoe danal patai mabaeg, a mura mamoe nainönöb uzar.

28. Muasin, a ngai lakö igililenga, ngai kulai uzar ngita mun parungu Galilaiapa, nigita kai wagel.

29. Petelu iamuliz nubepa, keda, Sike tana mura nginungu getö waniz, ngai kai launga.

30. Iesu iamuliz nubepa, keda, Mina ngai ngibepa muliz, ngi ukamodobigal ngaungu gudö tadiz, nabi kubilu ina, a kalakala ukasar poibainginga.

31. Noi koi ma iamuliz, keda, Ngai ngibia kalmel umanga, wa, ngai nginungu gudö tödainginga, Mata keda tana mun mura ia.

32. Tana mangizo wara lago, Gethesemane nel, Iesu iamuliz nongo nai kazi, keda, Apatanorömoiu ina, kurusipa inö muasin ngai töitu pagizö.

33. Noi Petelulpa angan, a Iakobo, a Ioane a kuika iman körkak koamasin, a mazarpagan.

34. Noi iamuliz tana mulpa, keda, ngau mari mina köi kikiri, keda kikiri umö nanga midö ; ita köu nitamau a poipiam.

35. Iesu köpa amadan uzar, a baradaranu apatanoriz, a töitu pagiz, a nubia mangaginga senabi haua siëi nubia sike ngulaig.

36. Iesu iamuliz, keda, Aba, Baba, ngi ngulaig zanguzangu mura ngaungu mani senabi binibini ina, ngau ubilnga lakö maigi, kapuza nginu ubilnga.

37. Noi mangizö a iman tana a utui; noi iamuliz Petelu, keda, Simonae, ngi utui? ngi magao ginga poipiam senabi haua urapon.

38. Ngita poipiam, a töitu pagiz ngita muia utainginga senabi nutan; mari magao, a gamu gögainga.

39. Iesu lakö uzar töitu pagizö, a iamuliz, senabi urapu ia.

40. Noi lakö kunia tridizö a imiz tana a lakö utui, tana mun puruka maitui, tana körawaig nubepa modöbia iamuliz.

41. Iesun uka modobilgal mangail a tana mulpa iamuliz keda, ngita mun utui, ngöna pudizö; keda mangizö ina haua; ngapanagemiu, Mabaegau kazi muasin kobegad karumpalan setabi mura mabaegau watri getö.

42. Kadaini taman, ngalpaldui pa; ngapanagemiu, amadan senabi mabaegan ngona gударan.

43. Noi közi muliz, Iuda mata döbura mangizo wara kalmel tana munia tuelv mabaeg, noi kalmel mura mabaeg koi kuiai turik a gabagaba patra uradiz, tana mulngu wakai uiamoi mabaegangu, a minar polai mabaeg, a durai moroigal.

44. Noido senabi mabaegan noinö gударan, tana mulpa iamuliz, keda, senabi mabaeg ngatö gudö tapaman, wa, sena noi, noinö gasaman, a köima kai puzaromoin.

45. Noi mangizö, noi mata döbura Iesulpa uzariz, a iamuliz keda, Rabi, Rabi, a noinö gudö tapaman.

46. Tana nubepa getö pagaeen, a noinö gasaman.

47. Wara tana murungu kadaitariz, a kuiai torik dököpingu pardan, a mata man senabi mabaegau wakaia uiamoi lagau niai kazi, a nono kaura patan.

48. Iesu iamuliz tana mulpa, keda, Midö, ngita ngaeapa boie uzar keda puru mabaeg nanga midö, kuiai torik a gabagaba patra uladiz ngaeapa mataman?

49. Ngai ngita munia wakai uiaipa puzipu senabi dana ngoro ngomai lagopa, a ngita ngöna gasamoinginga, mata ngadagid senabi ia minarपालan.

50. Tana mura nubepa getö wanemin, a arizö.

51. Wara kawa-kuig nubia asin, nongo gamu abizö dumawagu sak wali lino abainginga; durai kawakun noino gasaman.

52. Noi getö waniz senabi sake wali lino a kasa kupal arizö.

53. Tana Iesun gasaman tana mulpa köi görközipa wakai uiamon mabaeg, a tana minar pölai mabaeg.

54. Petelu nubia wagel gabudan ulaipa senabi ngabadö, köigörköziu wakai umai lagö, a kalemel niai kazi apata nori, a muipa koamapa kalmel niai közia apatanori.

55. Tana durai köigörköziu wakaia uiamöin, tana ia balbaigi palan, a nubepa wakain pagaipa a noinö mataman ; a imainginga.

56. Köi görsar mabaeg nubepa ngölkai iamuliz, a tana nainonobe iamuliz.

57. Durai kadaini taman nubepa ngalakai ia taeen, keda.

58. Ngöi karengemin noi iamuliz, keda, Ngatö idimoin senabi lagö getau moidai zinga, seta uka modöbilgal göigöil, ngatö wara möidan getan moidainginga.

59. Tana urapon iabu ia mulainginga.

60. Tana mun wakai uiai mabaeg dadal kadaitariz, a Iesulpa iapupoibizi, keda, Ngi modobia iamulaigia? tana mun ia miëi ngibepa imulizilamizo?

61. Iesu ia mulainginga, a modobia mainginga. A tana mun köigar-kazi wakaia uiamoin a lakö nubepa iapupoibizi, keda iamuliz, nubepa, ngi Keriso, ngi Mamal tötiu kazi?

62. Iesu keda, Ngai inö ; ngita iman kai Mabaegan kazi getadögam apa tanori senabi Parpar, kalmel daparau zia uzar.

63. Senabi köi görköziu wakai uiamoin noidö nongo dumawaku paieie gamöin, a iamuliz, keda, Mipa wara ia imulizilamizö ;

64. Ngita muasin karengemin Augada gegetö pungan ; ngita mun wakai tama main midö? Tana mura kuduman keda mata ngadagid noi umanga.

65. Durai mabaeg kuika iman noino mosan sulupan, a nongo paru supu nuran, getan nubepa mataman, a iamuliz nubepa keda, pa perofeta lakö, tana niai kazi noinö mataman.

66. Petelu apatanori ngabadönu muinu, wara ngawakazi uzar köigörköziu waia uiamai lagau niai kazi.

67. Nadö Petelun iman muingu köamapa, na nubepa nagizö a iamuliz, keda, Ngi senabi mabaeg kalmel Iesu Nazaretalaig?

68. Petelu gudö tadiz, a iamuliz, keda, Ngai körawaig, ngatö mamu ngurupainginga senabi nginu ia, Noi adapadan ioungapa, a kalakala poibiz.

69. Lakö noinö iman senabi ngawakazi niai kazi, a kuika iman iamuliz kadain sei mabaegöpa, keda, Wara tana mun inö.

70. Petelu lakö gudo tadizö, soabaginga a senabi kadai tarai mabaeg a iamuliz Petelu, keda, sike mina ngi wara tana mun mabaeg ngi Galilailaig, ngita mun urapon iangukudu.

71. Petelu kuika iman bögailbögaig gudö tadiz, keda, ngai köra-waig nabi mabaeg ina ngita mulpa iamuliz.

72. A kalakala ukasare pöibizi, Petelu ngonanu mani senabi Iesun ia nubepa mulizö, keda ngi uka modobilgal ngaungu gudö tadizö, a ukasar launga, kalakala poibiz, noi ngona numani, a noi mai.

#### X.—SAIBAI AND ENGLISH VOCABULARY.

This Vocabulary, of about 3400 words, is compiled chiefly from the mss. of Sharon (ms. 8), Macfarlane (ms. 6), and Haddon (ms. 3), but all the words contained in other vocabularies have been added. Words unmarked may be regarded as the common language, and are found in the Translation (16) and in Macfarlane's list (ms. 6); in other cases the exact locality in which the word was obtained is marked as follows:—

s. Saibai, from Sharon (ms. 8).

m. Muralug, or Prince of Wales Is., from Jukes (Port Lihou) (1), Macgillivray (Kowrarega), (2), and Haddon (ms. 3).

b. Boigu, or Talbot Is., and Saibai, from MacGregor (23).

mg. Masig, or Yorke Is., from Jukes (Masseed), (1), Stone (Machik), (10), and D'Albertis (9).

t. Tud, or Warrior's Is., from Curr (15).

mb. Mabuiag, or Jervis Is., from Savage (ms. 7).

The lists collected by one of us, contain words from all of the above, as well as from (n.) Nagir, or Mount Ernest, Moa, or Banks' Island, and Bădu, or Mulgrave Island.

The cases of nouns and verbal expressions are given with the simplest form in square brackets. The numbers in curved brackets refer to the pages in the *Ethnography* ("Journ. Anthropol. Inst." xix. 1890), where the object mentioned is described.



*Saibai-English Vocabulary.*

**A, conj.** and, also; but.

**aba (м), pron. dual,** us two.

**abainganga, a.** not covered, uncovered, bare, naked.

**abal, n.** a single fruit of the pandanus.

**aban (м), pron.** our (inclusive dual).

**abeipa (м), v.** to cover over, overshadow. [aban].

**abizō, n.** a covering.

**abul = abal; abul-dan' (lit. pandanus-eye),** the kernel of the pandanus fruit.

**ada, ad.** out.

**adabada-mitalnga (в), n.** brackish water.

**adabadu (в), n.** salt water.

**adabu (м), n.** salt water.

**adadadagainga (в), v.** to dine.

**adadōgam, n.** outside. [adadogapa.]

**adakado, ad.** through.

**adal, ad.** out.

**adan, a.** open, opened; *v.* from adeipa.

**adapa, ad.** out, away, off.

**adapadan, a.** past; *v.* to issue.

**adapagan, v.** to come out; adapagan gulngu, come out from the ship.

Mark, vi. 54.

**adapakadaman, v.** to peel.

**adapamani, v.** to remove, to take away.

**adapamizin, v.** to depart, to go out, to escape.

**adapa-taeen, v.** to throw away.

**adapa-tamoin, v.** to escape.

**adapa-waeen, v.** to disperse.

**ada-pudiz, adaputiz, a.** superior, highest; *ad.* beyond.

**ada-puidan, v.** to eject, extend.

**ada-taeen, v.** to leave, to abandon, to reject.

**adautubaba (в), n.** a wing feather. Cf. baba.

**ada-wakaimizin, v.** to spite.

**adeipa (м), v.** to go out; to perforate, cf. adan.

**adi (м), n.** a mythical person turned into a rock. (Legends, i. 181).

Cf. Miriam Ad.

adi (B), *n.* a story or tale.

adia (?), Mark, iv. 11.

adigila (T), adizela (T), *n.* a wig.

adö (B), *n.* a goose.

adoäma (M), *n.* an uncle; mother's brother. Cf. tati, keuba tati, wadum.

adüdzolai (T), *n.* a wig. Cf. adigila.

adzar (M), *a.* forbidden as food.

ae, *exclam.* ah! Mark, xv. 29.

aewidan,

aga, *n.* an axe; aga-turik, aga-turi, an iron axe.

agaleg (M), *n.* an eagle.

agu (Mb), *n.* a platform on which the shells of turtle were preserved (406).

agu (M), *n.* a cairn of stones; the back of a turtle.

ai, *n.* food. [aidu, aipa, aingu.]

aibo (M), aibu, *n.* the south-east monsoon; name of the dry season.

aidai, *v.* to have, to possess.

aidainga, *a.* having, possessing.

aideigan = aidainga. Mark, iv. 25 (or ? = not to have).

aidu, *n.* food. Cf. ai.

aidu-poiban, *v.* to give food, to feed.

aie, *v. imperat.* come! (from a place near).

aie-wêl (M), *v. imperat.* come here!

aigar (?), nanu aigar bapudan, all her living. Mark, xii. 44.

aigi, *suffix* to adjectives implying negation.

aigiasina (B), ripe.

aigina, *suffix*, none, not; tanamunia aiaigina, they have no food. Mark, vi. 36.

aigingga, aigingö, *a.* not having.

aigi-taeen, *v.* to spend, to finish (?). Mark, v. 26; xii. 22.

aigi-tonar (S), *n.* famine time; winter.

aikaka (M), *pron.* myself.

aima (?), ngöna butupatan göugan aima, make me clean. Mark, i. 40.

aimai, aimipa, aimeipa, aimöipa, *v.* to make, to do, to build. [aiman.]

aimiz, *v.* to commit adultery. Mark, x. 19; to destroy, Mark, iii. 6.

aimiz-gudaran, *v.* to betray.

aimizi, *v.* to betray. Mark, iii. 19; to kill, Mark, vi. 19.

ai-purutan, *v.* to eat food; *n.* a feast.

ai-za, *n.* food.

ajir (м), *n.* shame.

ajiran (м), *a.* ashamed.

aju, (м), *n.* a shell, (*Cypræa*).

aka, *n.* fear.

akagi, *v.* not to fear; do not fear.

akaginga, *a.* not fearing.

akamaiza, *n.* a shield. Probably a made-up word. Cf. aka, mai, za.

akamiz, *exclam.* oh!

akanö, *v.* to fear.

akir (мб), a word used in connection with the "small name" (406).

akul, akulö, *n.* the clam shell, (*Cyraena*); used as a spoon; also used as a knife in making masks and other objects.

akur (м), *n.* the intestines.

älæ, *n.* alai (м), husband.

alakö, *n.* a rent, a tear. Mark, ii. 21.

alaliz, *v.* to puzzle.

alase, *n.* salt. A Greek word introduced *via* Lifu. [alasiu, alasenu.]

alasilgal, *n.* salt persons; Mark, ix. 50. kapu za ngita alasilgal, good thing (if) ye (are) salt people. Eng. = have salt in yourselves.

alasure,

albei (м), *pron.* we two.

albeine (м), *pron.* our (exclus. dual).

albinipa (м), *pron.* for us two (exclus. dual).

älgadi (м), *n.* the barb of the javelin = (tun).

äldan (т), *n.* a groin shell used when fighting. Cf. lorda.

alka (м), a spear (333), probably kalak.

alopa (м), *n.* the melon or scoop shell, (*Cymbium*). Cf. alup, salop.

alotö (в), *n.* salt.

alpa (м), *pron.* let us; shall we?

alub,

alup (aluk м), *n.* the melon, bailer, slipper, or scoop shell, (*Cymbium*).

Cf. salop.

am = amu.

äma, *n.* mother; mother's sister. Used only in the vocative. Cf. apu.

amadan, *a.* near.

amaean, *v.* to creep, to crawl.

amai, *n.* a native oven, often called *köpamauri*. The latter is an introduced term.

amaipa, *v.* to make, create.

amaizö, *v.* to beg.

amal (*Б*), *n.* a cloud, cumulus.

amamu, *ad.* well.

amau (*с*), mother, = ama.

ame. Cf. amai.

ameipa (*м*), *v.* to be affected with.

amori (*с*), *n.* a sail.

amu, *n.* a plaited native rope used with the dugong harpoon.

ana (*м*), *pron.* me, my.

anaga (*м*), *ad.* where?

anamu, *a.* hale.

angai-dumawaku, *n.* coat. Mark, vi. 9.

angan-toridiz, *v.* to carry.

angeipa, *v.* to hold, to carry. [angan].

angemina (*Б*), *v.* to swallow.

angizö, anguzö, *v.* to put on (of clothes.) Mark, vi. 9.

anwar (*мг*), *n.* finger-nail.

aona (*м*), *n.* the sting ray. Cf. tapi.

ap = apa, apö.

apa, *n.* ground, earth, soil, country; pl. apal. [apau, apapa, apangeu, apia.]

apa, apal, apalö, *ad.* and *prep.* down, under, below.

apa-dökam, *n.* the under side, the bottom (lit. ground side).

apai, *a.* low.

apal, *n.* the bottom; *kuikaiman gimal kurusipa apal*, from the top to the bottom. Mark, xv. 38.

apalapal (*с*), *n.* the world (lit. below).

apapui (?), apa, pui. Mark, iv. 32.

apasin, *v.* to stoop.

apataean, *v.* to be cast down, to be offended. Mark, iv. 17.

apatanu (*Б*), apatanor, apatanur, *v.* to sit down. [apatanoriz.]

apatanori, *v.* abide (imperative). Mark, vi. 10.

api, *n.* a fishing net.

api-angai-mabaeg, *n.* fisherman (lit. net-holding-man).

apia (? from apö); ina kai umai apia purutan laulauiu magina kaziu  
börupudaizing, the dogs under the table eat the children's  
crumbs. Mark, vii. 28.

apia-iaunano (*s*), *v.* to lie down.

apiga, *n.* the Malay apple, a *Eugenia*. Cf. List of Introduced Words.

apnu (*s*), *n.* a village (lit. in country).

apö, *n.* a field, garden, plantation; konau apö, *n.* corn field. Cf. apa.

apopauna, *n.* the hand.

apörega, *n.* a bird, the "native companion."

apu, *n.* mother; mother's sister. The common noun. [apupa.] Cf.  
ama.

arage (*m*), arake, *a.* silent.

arai (*s*), *n.* rain, = ari.

araingia, *v.* not to flee; ngita araingia, ye flee not. Mark, xiii.  
18.

arakato = arkatö.

arang (*m*), *n.* armpit.

araräpa (*m*), *n.* a small bat.

arawi (?), arawi-gul (*s*), *n.* a ship.

arepa, *v.* to shield.

ari, *n.* a black louse.

äri (*m*), *pron.* we, us.

ari, *n.* rain.

ärien (*m*), *pron.* of us, our.

arīga (*m*), *n.* a fishing line.

ärinipa (*m*), *pron.* for us.

ari-pudeipa (*m*), *v.* to fall; (lit. rain falls).

ari-puilaig (*mb*), *n.* the rain-man; a sorcerer producing rain (401).

ariüg (*m*), *n.* a fishing line.

ariz, arizö, *v.* to flee.

arkatö (*s*), arakato, *n.* a hole; arakato putran, *v.* to make a hole.

arö, *n.* dawn, daybreak.

arodardö (?), tanamulpa arodardö garö ngalekan mai kapuakösingia,  
upbraided them with their unbelief. Mark, xvi. 14.

aröpugiz, *v.* to cry out. Mark, xv. 39.

asarö, *v.* to sneeze.

asigi, *a.* not with. Mark, ii. 19.

asigingā, *a.* not being with, not accompanying or following. Mark, ix. 39.

asima,

asimpa (?), noi gurugui nagepa puruka borbaradö gamu asimpa tanamulpa, he had looked round about on them with anger. Mark, iii. 5.

asin, *v.* to be with ; *prep.* with.

asir, *n.* shame.

asiran, *a.* ashamed.

äta (M), *n.* the belly of a turtle.

atadonga, *a.* broad, wide.

atadrün (S), *n.* native bread.

ätang (M), *a.* flat ; (see äta).

ati, *n.* the octopus. Cf. sugu and arti, Miriam Vocab.

au, particle expressing the locative, used before names of places.

au, *exclam.* oh !

auak (Mg), *n.* a woman. (Stone). Cf. awash.

auar, *n.* a claw, = awar.

auai, *n.* paint.

augada, augadö, *n.* God (introduced meaning). Cf. augüd, Mir. agud.

[augadau, augadan, augadapa, augadano, augadal.]

augosa = uka, ukasar, two ; warabon augosa, three.

augüd, *n.* a totem.

auwa, *n.* a mat.

auwai (M), *n.* the pelican, = awai ; auwai-kap = awai-kap.

awai (Mb), *n.* the pelican ; awai-kap, the pelican dance (362).

awar (B), *n.* a claw.

awash (M), *n.* a woman's covering.

awiali,

awidizö, *v.* to honour.

awidö (B), *n.* an oyster.

azar (M), forbidden as food.

azazi (? travelling), azazi-san, *n.* shoe, sandal ; azazi-mabaegö, *n.* a guest ; nalaga azazi mabaeg, *n.* guest chamber. Mark, xiv.

14 ; azazi-zana (B), *n.* foot.

azipa (M), *v.* to become.

azirö (B), *a.* ashamed ; *v.* to blush ; *n.* shame.

aziran, *a.* ashamed.

azugerka (I), *n.* name given by a girl to her sweetheart. Cf. rogaig.

*Ba, conj.*, for, if; *ba poibanai*, for there shall be given. Mark, iv. 25; *ba ngatö tanamulpa waeen tanamun lagöpa*, if I send them to their houses. Mark, viii. 3.

*baba, babö, n.* father, in vocative only. [babange.]

*baba, n.* a feather; ( $\mu$ ), quill of an eagle.

*babad, n.* sister, = *babatö* or *babüd*.

*babange*; see Grammar, p. 139.

*babat, babatö, n.* sister; (see *barabatö*); a sister without children ( $\beta$ ), *pl.* *babatal*.

*basasum* ( $\tau$ ), *n.* the eyebrows.

*baba-wangu* ( $s$ ), *n.* father.

*babüd, n.* a man's sister or a woman's brother.

*babu-iabu, n.* a ditch (lit. a stream of the road).

*babun, n.* the tail of a fish.

*babur, n.* a scar.

*bada, badö, n.* an ulcer, a sore.

*bada* ( $\beta$ ), *n.* a shield.

*badag'ili* ( $\mu$ ), three.

*badaginga, a.* whole, entire; *nginu korka badaginga*, all thy heart. Mark, xii. 30.

*badalaiga* ( $\beta$ ), *n.* the yaws.

*badäle, a.* sore; ( $\mu$ ), *a.* sore producing.

*badalenga* = *badäle*.

*badanga, a.* on the left, left-hand. Cf. *böda-dögam*.

*badar* ( $\mu$ ), *n.* the toad fish.

*badi,*

*badöulai pa* (?), *Iesu nögain mamu badöulai pa*, Jesus looked round about. Mark, x. 23.

*bag, bagö, n.* the chin, lower jaw; the cheek.

*baga* ( $\beta$ ), *n.* a duck.

*bagabögub* ( $\mu$ ), *n.* a stone headed club.

*baga-mina, n.* a cicatrix on the face (367). Cf. *mausa usal*.

*bagai* (?), *noino bagai söلمان*, railed on him. Mark, xv. 29.

*bage, n.* a cloud.

*bager, n.* a long spear.

*bag-iata, n.* whiskers, (lit. cheek-hair).

*bag-taeen, bagö-taeen, v.* to promise.

*bagumö* ( $\mu$ ), *n.* lightning.

- bagur (м), *n.* pus.  
 bai (s), *n.* grass.  
 baibuli (B), *n.* an insect.  
 baidam, baidamö, *n.* a shark; baidam togui, a shark's fin, baidam-sai-togui, a shark's tail.  
 bai-ib (N, M), *n.* the eyebrows.  
 baiidun, *n.* a shark, = baidamö.  
 baili *n.* a basket made of the leaf of the coco-palm = boi.  
 bait (T, M), *n.* the cuscus (opossum of Cape York), = barit.  
 balbadö *n.* coast.  
 balbai, *a.* crooked, bent.  
 balbaigi, *a.* not bent, straight.  
 balbaingia, *a.* = balbaigi.  
 balbaig-palan, *v.* to put straight, to explain.  
 balbainga, *a.* crooked, wrong.  
 balbai-pudiz, *v.* to peep.  
 balbai-tidan, balbai-tridan, *v.* to make straight.  
 balbai-tilam, *v.* to bend.  
 balbai-tridaipa, *v.* to make straight, to rectify.  
 balö, *n.* breadth.  
 balopudan, see baröpudaipa.  
 balpudai (? root of baropudaipa), balpudai-döid, *n.* a market.  
 balopudan, balpudan, see baropudaipa.  
 baltariz, *v.* to stand still. Mark, x. 49.  
 bami-nadan (?), *v.* to put up with; to suffer. Mark, ix. 19.  
 ban, misprint for bau. Mark, iv. 37.  
 bangal, *n.* the morrow, the next day, the day before. Mark, xv. 42;  
 (M), two or three days hence.  
 banitan (?), Pilato köisarköisar banitan sisike noi umanga, Pilate marvelled if he were already dead. Mark, xv. 44.  
 barabatö (M), *n.* a man's brother or woman's sister. In vocative only.  
 baradai (s), *n.* earth, soil. Cf. apa, J.  
 baradar, baradör, *n.* earth, soil, ground. Cf. apa. [baradau, baradöran, baradaranu, bara dorönu, baradarangu.]  
 baradi, *n.* a stony hill.  
 bärdö, *n.* thatch.  
 bäri (M), *n.* grass.  
 baribara (B), *n.* a coconut, used for drinking purposes.



barit (т, м), *n.* the cuscus, = bait.

baröpudaipa, barpudan, balopudan, *v.* to buy; nanu aigar barpudan, her living, i.e., her food buying. Mark, xii. 44.

bărüder (м), *n.* mud. Cf. baradar.

batainga, *n.* the morning; (м) to-morrow.

bau, *n.* the sea; a wave of the sea; bau sik, *n.* waves. Mark, iv. 37.

bau, *n.* a spear.

baua (м), *a.* flat, plain.

bauka (?), mosan bauka weidaman, to foam at the mouth. Mark, ix. 18, 20.

beägi (м), *exclam.* a call to a blind person.

beara, *n.* the ribs. Cf. bero.

běge, *n.* a cloud.

beibăsa, *n.* eyebrow. Cf. babasum.

beidum (м), *n.* a shark, = baidam.

bepa, *suffix*, for.

berai (?), berai-pungaipa *v.* to be easy. Mark, x. 25.

běribei kar, *n.* a rope fence.

bero, *n.* the ribs, chest, side of the body. Cf. beara.

bero-pui, *n.* a lath (lit. rib-wood).

bête (м), *n.* drift-wood.

bia, *suffix*.

bidu (м), *n.* the porpoise.

bigu, *n.* a bull roarer with a low and deep note (406).

biia (м), *n.* a bird, the goatsucker.

biiu, *n.* the mangrove. "A gray slimy paste used as food, and procured from a species of mangrove (*Candelia*?), the sprouts of which, three or four inches long, are first made to undergo a process of baking and steaming—a large heap being laid upon heated stones, and covered over with bark, wet leaves, and sand—after which they are beaten between two stones, and the pulp is scraped out fit for use." Macgillivray, ii. p. 26.

bila (м), *n.* the parrot fish.

binibini (s), *n.* a cup; (s) a soup-plate (?); binibini alabasa, an alabaster box. Mark, xiv. 3.

bipi (?), (s), *n.* the nose.

biraig, *n.* a table.

birgesera. (Ethnography, p. 415).

- bisi, *n.* the sago palm ; sago.  
 bis-uab, *n.* mourning armlets and leglets made of *bisi* leaves.  
 bizar, (м), *n.* the purple yam. Cf. *ketai*.  
 boa (м), *n.* the conch shell, = bu.  
 bobata (м) *n.* a grandfather.  
 boboam (м), *n.* a shell, (*Ovulum*).  
 boboum (т, п), a shell (*Ovulum*) = buboam.  
 böbu, *n.* a rill, a stream, = bübü.  
 böda-dögam (s), *n.* the left side.  
 böda-get, *n.* the left hand.  
 bögail bögail (?), Petelu kuikaiman bögailbögail gudötadiz, Peter began to deny with cursing and swearing. Mark, xiv. 71.  
 Cf. List of Introduced Words.  
 bögi (s) *n.* a staff, a walking-stick.  
 boi, böi, *v.* to come, = boie.  
 boia (в), *n.* light, = buia.  
 boibasamu (в), boibisom, *n.* the eyebrows, = babasam.  
 boibata, *n.* a sister (see babatö, barabatö).  
 boie, *v.* to come, = boi.  
 boie (s), *n.* the voice.  
 boii (mb), *n.* a basket made of coco-palm leaf. Cf. *baili*.  
 bökadongö, *n.* a circle.  
 bom (м), *n.* a cluster of pandanus fruit.  
 boradar, *n.* earth, = baradai, baradar.  
 borbaradö (?), noi gurugui nagepa puruka borbaradö gamu asimpa tana mulpa, he looked round about on them with anger.  
 Mark, iii. 5.  
 börodan, = boradar.  
 börupudaizinga, *n.* crumbs ; magina kaziu börupudaizinga, the children's crumbs. Mark, vii. 28.  
 bötainga = batainga ; möge bötainga, morning long before day.  
 botaingina,  
 bradar (в), *ad.* here.  
 bru, *n.* an anklet (332).  
 brua (mb), *n.* an anklet made of coco-palm leaf.  
 bru-mada (м), *n.* the calf of the leg.  
 bru-rida (м), *n.* the shin bone.  
 bu, *n.* the conch shell, *Fusus proboscoidiferus*, used as a trumpet

- bu, *n.* the Pleiades. Cf. kusali.  
 bua (м), *n.* the bow of a canoe.  
 bua (mb), *n.* the wild yam; (м) *Calladium esculentum*.  
 buai (м), *n.* the bow of a canoe, = bua.  
 būbū (м), *n.* a stream of fresh water.  
 buadö, *n.* the side. [buadönu, buadia]  
 buboam (м), the egg cowrie shell. (*Ovulum*). Cf. boboam.  
 bubu (s), *n.* the tide.  
 bubuam (mb), a shell. (*Ovulum*).  
 bud, *n.* paint made from crushed coral used in mourning, hence  
     *n.* mourning.  
 budadigamö. (B), *n.* the left side, = böda-dogam.  
 budāman (м), *a.* flooded (lit. made muddy).  
 budi (м), *n.* a shell, the small periwinkle.  
 bug (mb), *n.*, ratan.  
 bugiri (B), *a.* blind.  
 buia, *n.* blaze, flame.  
 buieli (м), *n.* flame; (prob. *pl.* of buia).  
 buiu, *n.* a glass bottle; buiu ngukulnga, a pitcher of water. Mark,  
     xiv. 13. Cf. boii.  
 buji (м), a cane (*Flagellaria*).  
 buk (mb), *n.* a small mask.  
 buk, *n.* a common Siluroid.  
 bukö (s), *n.* sand.  
 buli, *n.* a fly.  
 bume (м), *n.* the frontlet of the *dri*.  
 bupa (s, B), *n.* the bush, the forest, uncultivated land; iamuliz  
     nubepa senabi bupau kuikungu, spoke to him in the bush.  
     Mark, xii. 26. [bupau, bupapa.]  
 bupariz, *v.* to flee. Mark, v. 14. Cf. bupa, ariz.  
 bupur, *n.* floor.  
 bura, *n.* a leaf (?). Cf. urapabura.  
 burbur (x), *n.* a small drum, = būrubūru.  
 burdö (м), *n.* grass, thatch. Cf. bardö.  
 burker (м), *n.* charcoal.  
 burkui, *n.* a leak.  
 būrom, *n.* a pig.  
 būrubūra, *n.* a small cylindrical drum. Cf. burbur.

burugamul, burugömul, *a.* ripe; burugömul kousa, when the fruit is brought forth. Mark, iv. 29; burugömul mael, *n.* harvest Mark, iv. 29.

burugo (м), *n.* the horsefly (*Hæmatopoda*).

bürum, burumö (м, в), *n.* a pig, *pl.* burumal. [burumau, burumepa, burumia.]

bürüm (s) = Bürum.

büta (м), *n.* the wing of a bird.

buta (?), senabi buta haua ukamodobilgal, *buta* haua sikis, buta haua nain, *about* the third hour, sixth hour, ninth hour; senabi göigöi butanu moidemin, the day of the preparation.

buta (в), *n.* a gate, a passage; butaginga, no passage. Mark, ii. 2.

butapa, *n.* a heir.

butö, *n.* autumn.

butu (м), *n.* sand, a sandy beach.

butupalizi, *v.* to shake off; butupalizi ngitamun sanangu poi, shake off the dust from your feet. Mark, vi. 11.

butupataipa, *v.* to cleanse, prepare, mend, heal. [butupatan, butupataizinga.]

butupataizinga, *v.* not to clean.

butupataizinga, *n.* washing.

butapötaizinga = butapataizinga.

buzar, *n.* and *a.* fat.

büzö, *n.* a reed.

buzu (м), *n.* the back stays of a boat.

Da (в), the breast or bosom.

dabai, *n.* the booby bird.

dabari, *n.* = dabai.

daboi, *n.* the king fish (*Cybium*).

dabu (мb) = daboi.

dada, dadö, *n.* the middle; dadaget (Moa) the middle finger; dadakubilu, *n.* midnight; dada-dim, dada-dimu, *n.* the middle finger; the number three, in counting on the fingers; dadagöiga, dadö-göiga, *n.* mid-day, noon.

dadaig (м), *n.* the third brother.

dadalö, *n.* the centre, middle.

dada-mamain, dadömamain, *v.* to divide.

dada-mangizö, *v.* to meet (lit. come to the middle).

dadān, *prep.* between.

dada-pasa, *n.* a window.

dadeima-matameipa (м), *v.* to kill.

dadeipa (м), *v.* to die.

dadia, *n.* Mark, v. 22, 30; dadia adan, came out to meet; mabaegia dadia mura, in the press. Cf. dada.

dadir (mb), the sternum. Cf. kosa.

dadu, *n.* a flag-like streamer made from coco-palm leaf.

dāgam (т, м), *n.* the bird of Paradise (*Paradisea Raggiana*); the head-dress made of paradise feathers used in war.

dagö, *a.* weak.

dagoi (м), *n.* a head-dress made of cassowary feathers used in a dance; dagoi sam (т). Cf. samērar.

dagori (м) = dagoi.

dai-bradara (в), *n.* clay.

daje (м), *n.* a petticoat, = gagi.

dak, dakö, *n.* the temples.

dalnga (s), *a.* kind (lit. possessing a bosom; see *da*.)

dalpimau-mabaig, *n.* lust. Cf. darpiam.

damu (s), sea-grass; ialdamu, kadapādamu, paradamu, different species of *Cymodocea*.

dan, danö, *n.* the eye; *pl.* danal; danö-ngurngomizö, *n.* religion (Macfarlane); danal-pataipa, *v.* to watch.

dana (т), a tooth; *pl.* danala.

danāgi, *a.* blind (lit. without eyes.)

danakuku (в), danakoko (м), *n.* the ankle.

danakukuro (т, м), *n.* an anklet, made of coco-palm leaf.

danaleg (м), *a.* alive (lit. possessing eyes).

dana-muktaean, danömukötaean, *v.* to glance at, to watch.

danal-patai, *v.* to look after, watch.

dana-pataipa, danal-pataipa, *v.* to watch.

dana-nuki (м), *n.* a spring. Cf. the Samoan, etc., mata-vai, spring, the (м) and Samoan are both literally eye-water.

daneipa (м), to rise, as the sun.

dang (в), *n.* a border or edge. Cf. dang, teeth.

dang, dangö, *n.* the teeth.

danga-kikiri, *n.* tooth-ache.

- dangal, *n.* the dugong (*Halicore australis*).
- danga-mai (mb, r), *n.* a crescent-shaped ornament of pearl shell (lit. tooth of pearl) (340).
- danga-mari (m), *n.* = danga-mai.
- dani, *n.* a tree.
- dänilkau (mb), *n.* one of the performers in the funeral dance (404).
- danö-paliz, *v.* to be awake.
- dan-taeen, *v.* to exhort.
- danule (m), *a.* wanton.
- daoma (m), *n.* yellow ochre.
- dapar, *n.* a cloud (m); the sky, heaven. [daparao, daparau, daparpa, daparngu, daparnu.]
- dapurkup (r), *n.* necklace.
- daraba, *n.* a plantation.
- dārai = durai. Mark, vii. 4.
- darbanu (?)
- darpapa, *n.* a bush (?). Cf. daraba.
- darpar (?) = dapar.
- darpiam, *n.* fornication. Mark, vii. 21. Cf. dalpimau.
- darubi (x), *n.* a bamboo jew's harp.
- darubiri = darubi.
- daui (s), a banana.
- dauaiaban, *n.* a row; *v.* to row. Mir. segise.
- dauda-laig, *n.* heathen.
- dauma (m), *n.* the period of mourning.
- dawal, *v.* to look (?).
- dawb (m), *n.* a yam.
- dega (mg), *n.* the sun.
- deka (?), ngoimulpa deka muliz, tell us. Mark, xiii. 4.
- dêla (m), *n.* a plant (*Scaevola Koenigii*).
- delupeipa (m), *v.* to drown.
- der (mb), a kind of breast plate made of coco-palm leaf, which formed a sort of yoke round the neck and extended down the chest, being tucked beneath the wakawal.
- dêrabu (m), *n.* a wild yam.
- dêri (s, m), *n.* a white feather head-dress, = dri.
- dewa-dagamola (r), *a.* yellow.
- dia, *n.* a cloud. Mark, ix. 7. Cf. jia, zia.

diabo. Mark, v. 13.

diadi, *n.* a sponge.

dibagö, *n.* dew; (B) a fog.

dibidib, dibidibi, *n.* a round shell ornament, the top of a cone shell  
ground flat; a dish made of shell.

dġidġi (M), *n.* a white duck.

dimunu-pagan, *v.* to pinch. Cf. dimur.

dimur (Mb), *n.* a finger.

dipaman, *n.* an oath.

dirdimai = dörödimöin.

diuidu, *v.* to retain; ngitamun pawa diuidu, your tradition. Mark,  
vii. 13.

diwanamani (B), *v.* to rejoice (prob. = diwana-mani, make a dance).

diwapa, *v.* to dance. See gamu-diwapa.

diwi (M), *n.* a scorpion. Cf. idiidi.

do, *n.* a bridge.

döam (Mb), *n.* the cross ties inside a canoe.

doar, *n.* a black sea fowl.

döba-buada, *n.* the wayside. Mark, iv. 15. Cf. buadö. [döbabuadanu.]

döbu (s), *a.* old, rotten.

dobunga, *a.* rotten.

dobura, döbura (always with mata); mata döbura, *ad.* immediately.

dödolae, *n.* the second brother. Mark, xii. 21. Cf. dada, alae, dadaig.

dögam, *n.* a place; a bed; table. Mark, vii. 4; the floor. [dogamunu,  
dokamnu.]

dögaman (? dögamanu, from dögam), in its place. Mark, xiii. 14.

dogei (M), *n.* the planet Jupiter (?) Cf. dorgai.

doid, döidö, *n.* a plain, a wilderness; balpudai döid, a market. [döidpa  
doidönu.]

dökal (?), ngita ngulaig amadan dökal natizö, ye know summer is nigh.  
Mark, xiii. 28.

dokam, dökam = dögam.

dokap, dökopi, *n.* the thigh; kuiai torik dökopingu pardan, drew a  
sword from the thigh. Mark, xiv. 47. Cf. drakapi.

dongan,

dönga-wakasin, *n.* a savage (Macfarlane).

döpuza, *n.* an old thing; döpu = döbu.

döra-tudan, *v.* to weed.

dordiman, *v.* to draw out.

dordimoin = dörödimöin.

dorgai, *n.* a kind of bogey or spirit; a constellation.

dorgai kukilaig, *n.* a constellation (Haddon, *Legends* i. 31).

dorgai waralaig, *n.* a constellation (Haddon, *Legends* i. 31).

dorodimai-lagö, *n.* prison (lit. bondage-house).

dörödimöin, *v.* to bind; to imprison; to hang.

dörödimozinga, *a.* tied; *n.* fetters.

drakapi (*m*), *n.* the thigh. Cf. dokap.

dri (*mb*), *n.* the cockatoo (?) (*Legends*, p. 29). Cf. wem.

dri, *n.* a head-dress made of white karbai feathers.

dri grer (*mb*), dri girer (*m*), *n.* the dance in which the dri was worn (362).

drudrupizö, *v.* to drown. Cf. dudupizö.

drurai = durai.

du (?), ita du tonaral, these signs. Mark, xvi. 17.

dua (*m*), *n.* the cashew nut.

dub (*s*), *n.* a swelling.

dubidubia, *v.* to murmur.

dubiruna (*b*), *n.* a wound.

dudupizö, *v.* to overthrow, drown; to overwhelm; to dip in a liquid;

dudupan senabi pagara vineganu, dipped a sponge in vinegar.

Mark, xv. 36. [dudupan.]

dugunga, *a.* blunt.

duia-adan, *v.* to be convalescent.

duiumö (*m*), *n.* thunder. Cf. giginö.

dukun, *n.* a tree with hard wood.

dulbor (*m*), *n.* a fish. (Jukes.)

dumawagu, dumawaku, *n.* calico, cloth (cf. waku), *pl.* dumawakul.

angai-dumawaku, *n.* garment. [dumawakuia.]

dumawaru (*b*), *n.* cloth.

dumawk (*m*), clothes.

dun (*m*), *n.* the eye-ball. (See dan.)

düna-kukur (*m*), *n.* an anklet of coco-palm leaf. Cf. brua.

duna-samu (*b*), *n.* the eyelid.

düngal, *n.* the dugong (*Halicore australis*). Cf. dangal.

dungulö (*m*), *n.* an opossum.

dupu (*b*), *n.* elephantiasis of the legs = dub.



dupu (м), *n.* the bronzed ant; the ague.

dūra (м), *n.* the breast, chest, mammae, = da.

durai, *a.* some; inabi durai, these; senabi durai, those.

durai-ina, *a.* these.

durai-siei, *a.* those.

durai-wanan, *v.* to remain (lit. some are left).

durö, *a.* = durai; tana gasamizö ita durö tabul, they shall take up serpents. Mark, xvi. 18.

durpum-gigo (s), *n.* thunder.

duru (?), kusa duru (м), a band of beads worn on the wig.

duru zönga, *a.* some things; duru zönga lupaliz, some wonders. Cf. durai.

Ege (?), kawaku ege kutau pawa, lasciviousness. Mark, vii. 22.

ejena (м), *n.* an insect (*Cicada*).

eka, *v.* to wish.

el, *suffix* denoting the plural of nouns.

elari, *n.* a fruit (*Wallrothia*) (308).

eldrada gomola (т), *a.* green.

elma (т), *n.* a species of snake.

enti (м), *n.* a spider.

eso, *v.* to thank.

Fad, *v.* a bird's nest.

fada = fad, pad.

Ga, *n.* a hornet.

ga, *n.* the central star in the constellation dorgai-kukilaig.

gabagaba (м), *n.* a club with a plain stone disc.

gabagup (mb), *n.* a stone club, = gabagaba.

gabau, *n.* a yam.

gabogabo (b), *n.* a stone club, = gabagaba.

gabudan, *v.* to be slow.

gabu-maita (b), *n.* bowels.

gabunga, *a.* cold, cool.

gaet (s), *n.* coral.

gaga (mg) = gagari.

gagadinga, *a.* weak, faint; defeated.

- gagai (м), *n.* a bow; (в), a gun; a dance (362). Cf. gagari.  
 gagal (м), *n. pl.* bow and arrows.  
 gagari (т), *n.* bow and arrows; trigger gagari, a gun.  
 gagauro (в), *n.* a bowstring.  
 gagi, *n.* an ear-ring.  
 gagi, *n.* a shrimp.  
 gagi (м), *n.* a large petticoat made of shredded leaves, and worn by women.  
 gaibur (м), *n.* the she-oak (*Casuarina*).  
 gaidesa (т), *n.* a shield.  
 gaiga (в), *n.* the sun, = göiga.  
 gaiga-buia (в), *n.* twilight.  
 gaigai (т), *n.* the king fish; the white fish.  
 gaiga-pudisö (в), *n.* the west (lit. sun-down).  
 gaima (м), an abscess, boil.  
 gaina (в), *n.* taro, = göen.  
 gainau, gaino, *n.* the Torres Strait pigeon (*Carpophaga luctuosa*).  
 gainöwa (м), *n.* a white pigeon (see gainau).  
 galalupa (mg), *v.* to be cold (Stone).  
 galupan, *v.* to shake; gamu galupan, *v.* to tremble.  
 gam (т), *n.* skin.  
 gam (т), fat.  
 gamakauwasina (в), *a.* lazy.  
 gamalunga (в), *n.* an albino. Cf. gamul, gamulnga.  
 gamu, *n.* the body. [gamupa, gamungu, gamuia.]  
 gamuasin (?), puruka parö madö gamuasin, an evil eye. Mark, vii. 22.  
 gamu-diwapa, *v.* to dance.  
 gamu-doidanu, *v.* to be tired. Cf. doid, nu.  
 gamu-dumawaku (s), *n.* clothing; a dress.  
 gamuia-mataman (в), *v.* to murder; gamuia-mataman-mabaeg (в), *n.* a murderer.  
 gamuidan, *v.* to ignite, to burn.  
 gamuji (м), *a.* itchy.  
 gamul, *a.* white.  
 gamulnga (м), gamulönga, *a.* white, red (?).  
 gamunguzilamiz, *a.* wild (gamungu, from body, zilamiz, run).  
 gamutariz, *v.* to touch.

ganguimizi (?), see garoguimizi.

gangurō (м), *n.* a large lizard.

ganu, *n.* a smell; *pl.* ganul.

ganul, *a.* possessing smell, scented; ganul pui, *n.* sweet spices. Mark xvi. 1.

ganupulman, *v.* to smell, make a smell.

gapu, *n.* the sucker fish (*Echeneis naucrates*), used by the natives in catching turtle (349).

gar, *suffix.*

gara (м), *n.* *Pandanus spiralis*.

garabo (? gara, *n.* the edge); tana kai garabō tradiz nongo dumawa kuia, they might touch the border of his garment. Mark vi. 56.

garagar (в), *a.* feeble.

garguimizi = garōguimizi.

garakazi, *n.* a boy, a male (lit. male person). [garakaziu] garakaziu garbad (mb), *n.* the gunwale of a canoe.

gariga (м), = göiga; gariga-titure (м), *n.* the morning star; garig kap (т), a dance held in May when fruit is ripe, and connected with the star kererki (365).

garkai (м), *n.* a man (black man).

garkaije (м), *n.* a tribe; men, women, and children.

garo, garō, *Prefix.*

garoguimai (в), *n.* an earthquake.

garo-guimizī, *v.* to quiver, to swing. [garoguimani], garōguimizī, *n.* earthquake.

garō-nanamiz, *v.* to throng, crowd.

garō-ngalkan, *n.* hypocrisy.

garo-palagiz (?); noi matadobura tanamulpa garōpalagiz, he immediately talked with them. Mark, vi. 50.

garo-pataman, *v.* to collect food in large quantities. Sam. to'ona'i.

garo-taeen, *v.* to press or touch (?).

garo-toitaeen, *v.* to repent.

garouian, *v.* to spread about (?), garouian senabi ia, to blaze abroad the matter. Mark, i. 45.

garowalgaipa, *v.* to wash. [garowalgan.]

garōwalgaigingā, *a.* not washed.

garowaragan, *v.* see garowalgaipa.

- garō-weidamoin, *v.* to assemble, gather together ; to approach.  
 ġaru (м), *n.* the sugar cane, = geru.  
 garuidamainö (B), *n.* a load.  
 ġarur (м), *n.* a small wasp.  
 gasa (м), = görsar.  
 gasameipa, *v.* to catch with the hands, to press, seize, squeeze ; (B), to hunt (kangaroo). [gasamizö, gasaman, gasamöingia].  
 gasamoingia, *pl. v.* not to take.  
 gat (Mb), *n.* a coral reef.  
 gata (м), *n.* shallow water. See gat, gato.  
 gatapogai (м), *v.* to dig ground for a garden.  
 gato, *v.* to ebb. See gata.  
 gauāda (м), *n.* a salt water swamp.  
 gaugu, *n.* medicine.  
 gaur, gaurö (?), ngita mulpa gaur irun, more shall be given to you. Mark, iv. 24 ; nabi kawa ina ngaeapa gaurö irun senabi iragud, this people honoureth me with lips. Mark, vii. 5.  
 gawai (mb), name of a plant ; "rope along bush," chewed in the initiation ceremonies (398).  
 gawata (B), *n.* a lagoon (see gauāda).  
 gedö = geto.  
 gegeda (s), *n.* faintness ; *a.* faint.  
 gegetö-pugan (?), Augada gegetö pugan, the blasphemy. Mark, xiv. 64.  
 ger, *n.* a water snake.  
 geriga (м), *n.* sun, = göiga.  
 gerka, *n.* the gall bladder (of a turtle).  
 geru, *n.* the sugar-cane ; g'ru tha mitāle (м), sweet tasted. Cf. garu.  
 gerukizi (т), *n.* a man, male, = garakazi.  
 ġēt, getö, *n.* the arm or hand ; *pl.* getal ; gerukisi get (т), *n.* a man's arm. [getau, getan, getangu, getia.]  
 geta-digamo (B), *n.* the right side, = getö dogam.  
 getal (м), *n.* fingers.  
 getāli (м), *n.* a large crab, = gitalai.  
 getauza (mb), *n.* rayed discs held in the hand whilst dancing. Cf. kababa.  
 get-idiz, *v.* to read.  
 get-matamizö, *v.* to strike the hands together, to clap.  
 getö, get, *n.* the hand, fore-arm, (м) a finger.

getö-dögam, *n.* the right side. [geta-dogamunu.]

getö-langai, *v.* to despoil, damage, appropriate. [getolangan, getalan-gailai.]

geto-langaizinga, *a.* injured; shamefully handled. Mark, xii. 4.

getö-nitun, *v.* to point at.

getö-oidan, *v.* to push.

getö-pagaeon, *v.* to lay hands on, to apprehend [stretch hands.]

getö-pudeipa, *v.* to scrape hands, the native mode of salutation.

getö-titai, *v.* to read.

getö-tridai, *v.* to read, = getö-titai. [getö-tridizö.]

getö-tridaingia, getö tritraingia, *v.* not to read.

getö-uan, *v.* to reach.

getö-wani, getö-waniz, *v.* to let go, release, abandon; to allow; to lose; forgive. [getowanemin, getöwanemin.]

getö-wönaingia, *v.* not to allow. Mark, vii. 12; not to forgive. Mark, xi. 26.

gi, *n.* a knife; gi-turik, *n.* an iron knife.

gi, *n.* a tusk.

gi, *n.* laughter; gi-waleipa (м), *v.* to laugh.

gi (в), *n.* an old dry coconut.

gi (м), *a.* ripe.

gi = igi; zagi, *a.* poor.

gia-paleipa (м), *v.* to cook.

gido,

gigal, *suffix*, used with adjectives.

gigi, *n.* thunder. [giginö.]

gigo, gigö, *suffix* expressing the want of anything; za gigö, without a thing, poor.

gigu (x), gigub, *n.* a nose ornament. Cf. gub.

gima-nanitan, *v.* to run over; tana gima nanitan siauki, they ran there afoot. Mark, vi. 33.

gimal, gimalö, *ad.* and *prep.* on, over, up, above. [gimaingu, gimainu.]

gimael, *suffix*.

gimamani, *v.* to reap.

gimia, *ad.* over.

gin (мг), *n.* taro.

ginga, *suffix* denoting non-possession.

gio (в), *n.* laughter, = gi.

- girar, *n.* a dance.  
 girer (B), *n.* a dance.  
 girka,  
 gitalai (B), *n.* a crab, = getäli, gitulai, gitila.  
 gita = get, getö.  
 gitalenga, *a.* having a hand.  
 gītīla, *n.* a crab, = gitalai, gitulai.  
 gitri (Mg), *n.* a knife.  
 gitulai, *n.* a crab, = gitalai, getäli, gītīla.  
 giu (S), *n.* laughter, a laugh.  
 giun-pungaipa, *n.* foolishness.  
 giung (M), *a.* cooked.  
 giure (M), *ad.* no.  
 giusalman, *v.* to deride.  
 gi-waleipa (M), *v.* to laugh. [gi-waliz.]  
 gizu, *n.* a point, an edge, a cape; (M), sharpness.  
 gizuge (M), *a.* blunt (lit. without point).  
 gizule, *a.* possessing a point; sharp.  
 gizu-paleipa, *v.* to cut a point, to sharpen.  
 gö,  
 goa (S, T), *n.* the seeds of *Pangium edule* used as rattles. Cf. gua.  
 goagalnga, *n.* a leak.  
 goalnga, *a.* leaky.  
 goba (B), *n.* a stone axe.  
 gobai (M), *n.* the larva of the ant-lion (*Myrmaleon*).  
 göen, *n.* taro.  
 gogadinga, *a.* feeble, weak.  
 gögainga, *a.* weak.  
 gogob,  
 goguta (M), *n.* the cotton tree (*Bombax*).  
 göiga, *n.* the sun, daylight, day; *pl.* göigöil. [göigöinu.]  
 göigöi = göiga.  
 gömöla, *suffix* used with names of colours.  
 gömu = gamu.  
 göinau, *n.* the Torres Strait pigeon (*Carpophaga*).  
 gönau, *n.* the skin.  
 gongau, *n.* the scalp.  
 gonza (S), *n.* health (? göuga).

göpagop (м) = gabagaba.

gorbotot, *n.* a wooden club.

görkozi = garakazi. [görköziu, görközipa, görkozingu.]

goröközi = görkozi.

görsar, *a.* many (usually with köi, köi-görsar).

göru-ridö, *n.* the back-bone, spine. Cf. taburid.

görzö, *n.* the bowels.

goua (b), *n.* a ditch.

göuga, *n.* a hat.

göuga, göugu, *n.* a doctor (see gangu); medicine. [göuguan, göugungu.]

goura (b), *n.* a pigeon.

gragri *n.* fever.

graka (mg), *n.* man, = garakazi.

graz (м), *n.* a fish trap or weir built of stones on a reef.

grer (м), *n.* a dance, = girar.

gridö (mb), *n.* the back. Cf. gorurido.

gua (mb), *n.* seeds used as a rattle, = gooa; *pl.* gual. Cf. goa.

guago, *n.* a hole.

guai, *a.* bald.

guapi (м), *n.* klakaguapi, the shaft of a klak.

gub, guba (м), *n.* a nose stick.

guba, gubö, *n.* the wind, *pl.* gubal; köi-gubö, *n.* a storm.

gübagüba = gabagaba.

gubal-puian, *v.* to blow.

gubau, *n.* a yam.

gubau-puilaig (mb), *n.* the wind-man, a sorcerer producing wind (401).

gubö = guba.

gud, gudö, *n.* the mouth; an opening; iragud (м), *n.* the lips; pasa-

gudö *n.* a door; maram gudö, *n.* a pit door, a tomb. Mark, xv. 47, xvi. 2.

gud (moa), *n.* a mouth board. (404).

gud (mb), *n.* a coconut water vessel. (404).

gudagö (?), korawaig tana ai gudagö asigi, they cannot fast. Mark, ii. 19.

gudaguda,

gudalnga (?), ngi sigo gudalnga, thou art not far. Mark, xii. 34.

- guda-magêda (м), *n.* the moustache.  
 guda-moin (s), *v.* to discuss.  
 guda-palamiz, *v.* to overflow.  
 guda-purutan, *v.* to be insolent.  
 gударан, *v.* to betray; aimiz-gударан (s), *v.* to betray.  
 guda-taeen, *v.* to sacrifice.  
 guda-toridan = gudö-toridan.  
 guda uiailai, *v.* to be forgiven. Mark, iv. 12.  
 guda-wodian, *v.* to dismiss.  
 gudawali (Mb), *n.* the lashing fastening the head of a javelin to its shaft.  
 gudazi-poidizi, *v.* to save, to heal.  
 gudia-ieudaipa, *v.* to fill, to be full.  
 gudop, *n.* the beard.  
 gudo-matamiz (?). Mark, iii. 5.  
 gudop-iata, *n.* the moustache.  
 gudö-nitun (s), *v.* to advise.  
 gudö-tadiz (s), *v.* to deny.  
 gudö-tapamoin, *v.* to kiss.  
 gudö-tödaingina, *v.* not to deny.  
 gudö-toridan, *v.* to compel.  
 gudö-waeen, *v.* to unload, to unloose.  
 gudö-wadan, *v.* to be quiet, hold one's peace. Mark, x. 48; to allow. Mark, v. 37.  
 gudö-waig, *v.* to unloose, to forgive. [gudauiailai, gudöwaeamai].  
 gudö-wodian,  
 gud-paliz, *v.* to bud.  
 gudria-ieutiz [?], press of men. Mark, ii. 4.  
 gudu = gudö.  
 gudu-tapaman, *v.* to kiss. [gudö-tapamoin.]  
 guêle (м), *a.* bald, = guai.  
 gügüre (м), *n.* a bow, = gagai.  
 gugus, *v.* to dig.  
 guigui, *n.* a collective name for the firesticks, (385); (hence, matches).  
 Cf. salgai, sagai, ini, iaka.  
 gui-waliz, *v.* to mock.  
 gul, gulö, *n.* a boat, canoe; *pl.* gulai. [gulab, gulpa, gulöpa, gulngu, gulai].



gulab, gulabö = gulpa. See gul.

gulan (?), iegese gulan, *v.* to cast lots. Mark, xv. 24.

gulgupö, gulugupö, *ad.* round about; gulugupö nagepa, to look round about. Mark, xi. 11; köbia gulgupö zilamizö, ran round about through. Mark, vi. 55.

gulngu-rugal, *n.* a cargo; baggage or goods from a ship.

gulugul,

gulungu = gulngu.

gul-waku, *n.* a sail, (lit. boat-mat).

gumi, *a.* secret; *v.* to conceal; *ad.* privately, secretly; gumi turan, *v.* to call aside.

gumiginga, *a.* not hidden.

gümulë, *suffix* used with names of colours. Cf. gömöla.

gungau (n), *n.* skin, (see gonau, gongau).

gurabi (m), *n.* a white lily (*Crinum*?).

gurba (m), *n.* a small crab.

gurgu-uzaru. See gurugui, uzar.

gurgui (?), pawa gurgui, *n.* tradition. Mark, vii. 9.

guru,

gurugui (s), gurgui, *ad.* around, round about.

gurugup = gulgspö.

gusi (s), *n.* a pillow.

guzi, *n.* a pillow, = gusi.

gwarabatutu (m), *n.* a stone club with numerous blunt projections.

gwarapatutu (b), *n.* a stone club, = gwarabatutu.

Ia, *n.* a word; language.

ia, *suffix* to nouns.

ia, *n.* the throat; (b), the oesophagus. [iapa, iangu].

ia, *conj.* and.

ia, *a.* loud.

iabu, *n.* a path, a road; babu-iabu, a ditch (lit. stream-road) gubau-iabu, a vent (lit. wind's path). [iabuia].

iabu-gudö, *n.* a path, a road. [iabugudapa, iabugudanu, iabugudia].

iabuiawai. Mark, viii. 14. Cf. iabu, iawa.

iadai-iadai, *n.* a messenger.

iadäl (mb), *n.* string.

iadi, *n.* a stone anchor.

- iadu-palgan, *v.* to tell, relate, confess, reveal. [iadupalgailai].  
 iadu-titan, *v.* to caution.  
 iadu--turizi, *v.* to inform.  
 iadu-wadan, *v.* to caution.  
 iaga (s), *n.* silence.  
 iagamiz, *v.* to wonder. Mark, v. 42.  
 iagasin (s), *a.* dumb.  
 iagetamani (B), *n.* a message.  
 iagi, *a.* dumb, without words; iagi-mari, a dumb spirit. Mark, ix. 17.  
 iagiasin, *v.* to be silent.  
 iagi-bödaï, iagi-botai, *a.* dumb.  
 iagigö, *a.* dumb.  
 iaginga, iöginga, *a.* no words, nothing.  
 iagudagudangu (?), tana iagudagudangu töeaipa, they were making a  
 tumult. Mark, v. 38.  
 iaia,  
 iaïame, *v.* to burn, = ieame.  
 iaïämiso (B), *v.* to burn.  
 iaka, (M) *n.* the sheath which protects the ends of the two fire-sticks, and  
 keeps them dry, and usually decorated with shi and timi kapul.  
 iakaman, iakman (s), *v.* to acquaint, to inform, to declare.  
 iakanoriz, *v.* to forget.  
 ial, *n.* the hair of the head; a wig (M); feathers.  
 ial-ai (Mb, N), *n.* hair twisted in curls.  
 ial-bupö (Mb, N), *n.* hair when short.  
 ialdamu (Mb), *n.* a species of *Oymodocea*. Cf. damu.  
 ial-kapö, (B), *n.* curly hair.  
 ial-pat (N, T), *n.* a comb.  
 iämar (M), *n.* a species of coral, branched.  
 ia-mui-taeen, *v.* to command.  
 iamulaigia, iamulaiginga, *v.* not to say.  
 iamuli, *v.* to speak.  
 iamulizö, *v.* to speak.  
 iäna (T), *n.* a basket; a bag; a sack. Usually made of coco-palm or  
 pandanus leaf. [iananu.]  
 ianalö, *pl.* of iana.  
 iananab (?), iananab nubepa iamuliz, say to him one by one. Mark,  
 xiv. 19.

iananga, see Grammar. Nouns, 4, i.

iang,

iang-kudru (s), *n.* language.

iang-ngadalnga (s), *n.* a metaphor, a parable.

iang (?). Mark, viii. 33.

iangu-kudu, *n.* speech, language; ngitamun urapon iangukudu, your language (is) one.

iangu (?), ina pawa iangu ngadalnga, the parable.

iapaladö, *n.* the lungs.

iapar, *n.* a band (?); kula iapar taizi nongo katrö, a stone band put on his neck. Mark, ix. 42. Cf. next word.

iapara (mb), *n. pl.* ornamental bands worn on the body in the merkai dance, red, black, and white.

iapapa (m), *v.* to choose, to select.

iapopoibiz, *v.* to ask, to question, to beg.

iapopoizö, *v.* to ask. Mark, iv. 10.

iapupoibepa, *v.* to ask.

iaragi (s), *a.* angry.

ia-supaman, *v.* to bear false witness.

iata, *n.* the beard, whiskers, etc.

iatai, *n.* a band or company, a row of men; *pl.* iatial; *ad.* in ranks. Cf. Mir. nosik.

iataman, *v.* to be angry.

iata-patizö, *v.* to shave.

iataran = iaturan, *v.* to contend, to be divided against, see iatormai.

atial, *pl.* of iatai.

iatizi, *v.* to ooze, to come in, of water; ban sik iatizi gulöpa, waves beat into the ship. Mark, iv. 37.

iatormai (?), iatormai kuikulunga, *v.* to make insurrection; tonar iataramai, insurrection time. Mark, xv. 7; iatorö moipa, *ad.* for envy. Mark, xv. 10.

iatu (t) = iata, *n.* the beard.

iaturan, *v.* to contend.

iauakazöuedan, *n.* a noose.

iau-kawa, *n.* a market.

iaumai-laig (s), *n.* a council house.

iauman, *v.* to discuss.

iautiz, *v.* to hoist.

- iautumiz, *v.* to command; *n.* command. [iautumizi.]  
 iautumoizinga, *n. pl.* teachings, commands.  
 iawa, *v. imperat.* farewell! good-bye!  
 iawaig (?), noi iawaig siëi mabagi lago, he was without in desert places. Mark, i. 45.  
 iaweipa (м), *v.* to see, look after, watch.  
 iba-eba, (м), *n.* sandstone.  
 iban (s), *v.* to rub, to scrape.  
 ibara (м), *n.* a crocodile (perhaps introduced from Daudai). Cf. kodal.  
 iböpoidan (B), *v.* to hunt (men).  
 ibu (м), *n.* the chin, lower jaw.  
 ibupoidan, *v.* to help, to assist.  
 id, idö, *n.* a small bivalve shell.  
 idai = iadai, mina idai, *n.* gospel, Mark, i. 14; warö idai, some messengers; setabi idai, those people. Mark, xvi. 14.  
 idaig (?), *suffix*; tratra idaig, stammerer; ngölkai idaigal, hypocrites.  
 idara, *n.* a beetle.  
 ideipa, *v.* to unloose, untie.  
 ideipa (м), *v.* to scold.  
 idi, *n.* oil.  
 idiidi (м), *n.* a scorpion. Cf. diwi.  
 idiidi (м), *a.* fat.  
 idiman (?), tana kuik idiman 'they wagged their heads. Mark, xv. 29. Cf. idun.  
 idimizi, *v.* to destroy, to erase. Cf. idumai. [idumoin, idumoingana.]  
 idin (?), noi kuikuiömo nida idin senabi durai kikiri. Mark, vi. 57.  
 idö, *n.* a small bivalve shell.  
 idöi (?). Mark, xvi. 12.  
 idumai *v.* to vanish. [idimizi].  
 idumiz, *v.* to melt. Cf. idumai.  
 idun, *v.* to mock.  
 ie,  
 ieame, *v.* to burn.  
 ieda, *n.* the gill of a fish.  
 iedai (B), *n.* a rumour, = iadai.  
 ieda-waianö, *v.* to warn. See iadu-wadan.  
 iege,  
 iege-palan, iege-paran, *v.* to mock, to revile.

- iegeese (?), iegeese gulan, *v.* to cast lots. Mark, xv. 24.  
 iegiadon, pleased (?). Mark, vi. 22. Cf. ia, gia, adan or dan.  
 ielai (м), н. the crest of a cockatoo.  
 ielpaman, *v.* nongo kalmel ielpaman ita watri mabaegal, he was numbered with bad men. Mark, xv. 28.  
 ielpān, ielepan, *v.* to lead; niaipa-ielpānō, *v.* to lead to a seat, to marry.  
 iēna (м), н. a basket, = iana.  
 iengu (?), ngau iengu mai, for my name's sake. Mark, xiii. 13.  
 iērka (м), н. wax.  
 ieso, *v.* to praise, to thank. Cf. eso.  
 iēte (м), н. the spider shell (*Pteroceras*).  
 ietu (м), н. a barnacle shell found on the turtle.  
 ieudan (?), makiam ieudan, cried out. Mark, vi. 49.  
 ieudapa. See gudia ieudaipa.  
 ieude. See ieudepa.  
 ieudepa, *v.* to ask, to beg. [ieudizi, ieudemipa.]  
 ieudiz, ieutiz, *v.* to put. [ieudan.]  
 igalaig, н. a kinsman, a friend; *pl.* igalgal. [igalgōpa, igalgia.]  
 igalaigu (н), н. an uncle.  
 igaligal (s), а. glad; *ad.* gladly.  
 igi, *suffix* expressing want or non-possession.  
 igili, н. life.  
 igililemael, н. the living.  
 igililenga, igililōnga, а. possessing life, alive.  
 igili-paliz, *v.* to give life, to save. [igili-palan.]  
 iginga, *suffix* expressing non-possession.  
 igipali = igili-paliz.  
 igur (м), *exclam.* of pity; poor thing!  
 iūwi (yiwi) (s), н. a mosquito, = iwi.  
 iūlo (yilo) (н), н. the gall bladder.  
 ika, н. joy, gladness.  
 ikai (м), н. milk; sap; nipple of breast.  
 ikalikal, *ad.* joyfully, gladly. Cf. igaligal.  
 ikane,  
 ikan-pungaipa, *v.* to please.  
 ika-tiaipi, *v.* to please, to rejoice, to be glad.  
 ikur (s), н. a rope.

ilagiz (?), lakö kai pa ilagiz, the rent will again fly open. Mark, ii. 21,

See palagiz.

ilamiz, *suffix*, against.

ilarköübö, *n.* flax (Macfarlane).

il-get (mb), *n.* the middle finger; the index finger in Moa. Cf. klaknetoi get.

ima,

imainginga, *v.* not to see.

imaipa, imeipa (m), *v.* to see, to find; paru-imaamöin, they saluted.

[imiz, imizi, iman, imamoin.]

imaizigal, *n.* the person seeing a thing.

imana (b), *n.* the world.

imi (b), *n.* a spouse, husband.

imi (n), *n.* a sister-in-law.

imi-garkazi (b), *n.* a son-in-law (lit. husband-son).

imuliz-ilamizö, *v.* to say things against, to accuse, to envy.

imusö (b), a species of grass.

ina, inö, *a.* the, this; *ad.* here.

inabi, *a.* the, this; *a.* an.

inabi-durai (s), *pron.* these.

ina-nabiget (m), *n.* this hand; five.

inguje (m), *v.* to urinate.

ini, *n.* the penis; the vertical firestick. (385.)

inile, *a.* male (lit. possessing ini).

inil-tiam, *n.* a male turtle.

injura (m), *n.* a small lizard.

inö = ina.

inur (m), *n.* darkness, night. [inuria.]

iöbuia, *n.* by the way. See iabu.

io,

ioipa, *v.* to incline.

iöka *v.* to recline.

iönan *v.* to recline.

iöngu = iangu.

iounga, *n.* a porch. [iöungapa.]

ipal, ipél, *pron.* both, two.

ipatamainginga(?), ngi minaipatamainginga, carest thou not. Mark, iv. 38.

ipataman, *v.* to finish.

ipató, *v.* to finish.

ipatómaiging *a.* not believed. Mark, ix. 12.

ipi, *n.* female, wife, spouse. [ipiu, ipipa.]

ipiapö, (*в*) *n.* a fan; *v.* to fall.

ipidadö, *n.* evil, sin; *a.* bad.

ipidadö-pugan, *v.* to curse, to blaspheme.

ipikái (*м*), *n.* female, woman = ipikazi.

ipikai-kaje (*м*), *n.* a girl.

ipika-merkai (*mb*), a man dressed as a woman in the funeral dance.

ipi-kazi, *n.* a female, woman, wife (lit. female person).

ipoibisö (*в*), *n.* a noise.

ipökazi = ipikazi.

ipöközi = ipikazi, *pl.* ipököziel. [ipöközia.]

ipukaja burumö (*в*), *n.* a sow (lit. female pig).

ira (*м*), *n.* father- or mother-in-law.

irada, iradö, *n.* shade, shadow. [iradöpa.]

iradu-aban, *v.* to shade.

iragud, iragudö, *n.* the lips.

irka (*м*), *n.* resin, used in fixing the heads and joints of spears and throwing-sticks. Cf. ierka.

irun (*s*), *a.* mere.

irun (?), maita köiza irun, they were filled. Mark, vi. 42.

isau (*м*), *n.* a honey-comb, wax

isoa (*мг*), *ad.* all right.

ita, *demons. pl.* those, the,

ita (*м*), *n.* an oyster. Cf. itro.

ita durai, *demons. pl.* some.

itar, *n.* a spotted dogfish (*Chiloscyllium*).

itra = ita.

itro, *n.* an oyster.

iuamai (?) wakaiuamai mabaeg, *n.* priest.

iudepa, *v.* to ask, beg, = ieudepa. [iudiz.]

iudiz-mulan, *v.* to pour (?).

iuna (*мг*), *n.* sleep.

iuneipa (*м*), *v.* to lie down; to leave behind

iungu-ngulaig (*в*), *v.* to interpret.

iurdiz, *v.* to flow.

iutan, *n.* a grave.

inteipa (м), *v.* to pull, to drag.

itutizi = ielpān. Mark, xiii. 11.

iwai, *n.* the cloth-like spathe at the base of coco-palm leaves.

iwi, *n.* the mosquito.

Ja (mg), *n.* grass.

jag, *n.* a small species of fish.

jaga (м), *n.* a fish (*Lethrinus*).

jaji (в), *n.* a petticoat. See gagi.

jamo (м), *n.* the emu.

japudamino (в), *v.* to buy. See za-pudamoin.

japulaika (в), *n.* wealth, property. See zapulaig.

jaro, *n.* name of a card game. Probably introduced.

jawur (chawur) (м), *n.* a convolvulus with edible roots.

je (в), *n.* the south; (м) *n.* the sky.

jena (chena) (м), *demons.* that, these, those = sena.

jia, *n.* a cloud; scud.

jid (zheed) (м), *n.* a cloud. Cf. jia.

jina (china) (м), *v.* stop, enough! = sina.

jub (mg), *n.* the arm, shoulder. (Jukes.)

juma (shuma) (м), *n.* cold. Cf. sumai.

jur (м), *n.* the shoulder. (Jukes.)

Ka, *n.* the waist.

kab, kabö, *n.* a dance, = kap.

kaba, *n.* a paddle, an oar; kaba-nitun, *v.* to paddle, to row.

kababa (м), *n.* a disc held in the hand during a dance. Cf. getauza,

kabuzapla.

kaba-get (mb), *n.* the thumb.

kabai, *n.* an egret.

kaba-koku, *n.* the great toe.

kaba-mineipa, *v.* to dance.

kaba-nitunö, *v.* to paddle, to row.

kaba-sia, *n.* the great toe.

kabī-get, *n.* the thumb.

kabī-kok, *n.* the big toe.

kabo-nādur (т), *n.* a tail ornament worn in dances. Cf. nadur, nadual,

zamo-zamo.



kabu, *n.* the breast bone; chest (мг); the number ten in counting on the body.

kabu = kababa; kabu-zapla (т), a disc held in the hand while dancing.

Cf. getauza, kababa.

kabudan, kabutan, *v.* to set on, to put on, to put before.

kadai, kadaipa, *directive ad.* up, upward; *v.* to stand.

kadainitaman, *v.* to stand by. Mark, xv. 35.

kadaipa, *v.* to stand.

kadaipa-palagiz, *v.* to spill.

kadaipa-poidan, *v.* to ordain.

kadaipa-waliz, *v.* to ascend, to climb up.

kadai-tanure, *v.* to stand up, to rise.

kadai-taraingina, *n.* not to stand; not to endure. Mark, iv. 17.

kadai-taran, *v.* to lift up.

kadai-tarizö, *v.* to stand up, to rise.

kadai-tazö, = kadai-tarizö.

kadai-wapa,

kadalo,

kadaman, *v.* to tear; adapa kadaman, *v.* to peel; gamu kadaman, *v.* to tear the body. Mark, ix. 18.

kadapädamu (mb), *n.* a species of *Cymodocea*. Cf. damu.

kadazou = kedazou.

kadig, *n.* a gauntlet or arm-guard. (331.)

kadig-tam (м), *n.* the ornament of the kadig.

kadig-tang (mb), *n.* = kadig-tam.

kadik, *n.* a gauntlet or arm-guard.

kado (в), blood clots.

kadrö = kadai; kadrö palagiz. Mark, i. 10.

kae = kai.

kaet,

kaga (м), *n.* a grave.

kagiza,

kai (в), *a.* large, big; *ad.* very = köi; kai gulö (в), *n.* a ship; kai-waiwai, *n.* elephantiasis of scrotum.

kai (mb, s), *n.* a New Guinea mat. Cf. kaii.

kai, *particle* indicating the future tense; at the end of a sentence it is emphatic and = ki.

kai-alö (в), *n.* elephantiasis of the scrotum. Cf. kai, waiwai, kaiwaiwai.

- kai-ari (B), *n.* a flood (lit. great rain).  
 kaiaru (B), *n.* a crayfish, = kaier.  
 kaiba,  
 kai-biribiri,  
 kaibö, *ad.* now, soon; to-day (B).  
 kaibrodo-gömöla (T), *a.* white.  
 kaibu (M), *ad.* now, immediately, = kaibö.  
 kaied, *n.* a grandmother.  
 kaier, *n.* the crayfish; spiny lobster. Cf. kaiaru.  
 kaig (S), *n.* a post.  
 kaigas (MB), *n.* a kind of shark, perhaps *Rhina*.  
 kaigasa (M) = köigörsar, a great many.  
 kaigerkitalgaka (T), a warrior. Cf. kërketegerkai.  
 kaigob (MG), *n.* an arrow.  
 kai-görsar = köigörsar.  
 kai guba (B), *n.* a gale (lit. big wind).  
 kai gui (?), kaigui malu, *n.* the sea. Mark, ix. 42.  
 kai-gursaro = köigörsar.  
 kaigutal piti (B), *n.* a snout (lit. very long nose).  
 kiai (T), *n.* a mat made from the leaf of the Pandanus and  
 imported from Mowatta.  
 kai-ib (S), to-day, = kaibu, kaibö.  
 kai-ipiki, *n.* an old woman.  
 kaikai, *n.* a feather; (M) a quill.  
 kai-kosanö,  
 kai-maitalnga (B), *a.* corpulent (lit. possessing a big body).  
 kai mapunga, *a.* heavy.  
 kaimi (N), *n.* a brother-in-law.  
 kaimi, *n.* a mate, a companion, a follower; *pl.* kaimil; nongo kaimil,  
 they that had been with him. [kaimia.]  
 kain, kaine, *a.* new; kain ipi, bride; mabaeg kain ipi gasaman, bride-  
 groom.  
 kainga (?) Mark, iv. 6.  
 kaingulpa (?), burumal köi umen nanitan, diabo a padria, kaingulpa  
 malupa, the herd ran violently down a steep place into the sea.  
 Mark, v. 13.  
 kainidung (M), *n.* the new moon.  
 kaining (M), *a.* new, little used.

kaipui (B), *a.* a tree (lit. big tree).

kaisigalö = köisigal.

kaisigapa = köisigapa.

kaiwaiwai, *n.* elephantiasis of the scrotum. Cf. waiwai; kaialö.

kaiza (B), *a.* big, large (properly kai-za, big thing).

kaje (M), *n.* a child, = kazi; ipikai-kaje, a girl; mügi-kaje, an infant; nêtur-kaji, a son.

kak (N), the framework on which a corpse was dried. Cf. sara.

kakal *v.* to appear (?); noi kulai kakal Marialpa adapadan, he appeared first to Mary. Mark, xvi. 9; palamulpa kakal adan, appeared to two.

kakera (Mg), *n.* tortoise-shell.

kaki (N), *exclam.* I say! Look here! Cf. kawki, kami, komi.

kakiam (Mb, S), *n.* the bird of Paradise.

kaku,

kakur, *n.* an egg, ovary of a fish; the testicles (M).

kakura, kakurö, *n.* the feet.

kakurupataean, kakurpataean, *v.* to step across; *prep.* across; tana muasin tarödan kakurupataean, when they had passed over. Mark, vi. 53.

kal, kala, kalö, *n.* the back; the hinder part; the outside. Mark, viii. 15; (M), the back of the hand; kalapa, at the back, behind; kalanu, after that, then.

kalak, kalaka, klak, *n.* a spear (333); or rather a javelin, as it is thrown with the kubai.

kalakala, *n.* a fowl.

kalakönitu = klak-nitu.

kälapi (M), *n.* a large bean, = kulapi, "the produce of a vine-like creeper with legumes a foot in length, eaten with biu." Macgillivray, ii., p. 27.

kalemel = kalmel.

kalmel, *ad.* or *n.* together. [kalmelpa.]

kalmel-mönamöin, *v.* to unite.

kalmel-uzar, *v.* to accompany.

kalum-rida (M), *n.* the collar bone.

kalupi,

kamadi (M), *n.* a belt worn obliquely across the chest, made of young coco-palm leaf. Cf. naga.

- kamadö (в), *n.* a necklace.  
 kaman (м), *n.* heat, steam.  
 kamānale (м), *a.* warm.  
 kama-tauradiz, *v.* to nurse.  
 kami (м), *a.* dear (used by a female to a male, see kawki).  
 kamikamö (в), *n.* ringworm.  
 kamizingi, wur kamizingi, flood tide.  
 kämu (мг) *n.* the body, = gamu.  
 kamus *n.* another name for the Maiwa ceremony.  
 kangu (м.) *n.* a frog. (Pronounced kang-gu).  
 kanguru (?); kanguru-pagamoin, *v.* to be spread abroad (?).  
 kap, *n.* a dance. See kab.  
 kape (м), good, pretty, = kapu.  
 kape-ganule (м), sweet, fragrant (lit. possessing a good smell).  
 kape-parure (м), *a.* pretty-faced.  
 kap-garig, *n.* name of a dance. Cf. garig-kap.  
 kapi, *n.* the thigh; the legs (мг).  
 kapi-kisuri (м), *n.* moonlight.  
 kapi-taig (м), *ad.* a long way off.  
 kapu, *a.* good, beautiful.  
 kapu, *n.* seed; tomi kapu, timi kapu, small red and black seeds,  
 (crab's eyes).  
 kapua,  
 kapua kasinginga, kapuakösinganga, *n.* unbelief; *v.* not to believe.  
 kapua kasilai, *n.* faith. Mark, v. 34.  
 kapua kasin, *v.* to believe; *n.* faith, hope. [kapuakamoin].  
 kapuka-tete, *n.* the west; kapuka = kibuka.  
 kapukuiku,  
 kapu-minar, *a.* best (lit. good mark, probably a phrase adopted from  
 the mission schools).  
 kapu-mitalnga (в), *a.* edible (lit. possessing a good taste).  
 kaputo, *n.* the other side (of a river). [kaputopa].  
 kapuza = kapu za.  
 kar, *n.* a fence; bëribei kar, a rope fence.  
 kara (мб), name of a tree; the raw fruit is eaten in the initiation  
 ceremonies (398).  
 kara (м), = kai, köi.  
 kāraba (м), *n.* a paddle, = kaba.

karābai (r), *n.* an egret, = karubai, karbai.

karaba-tapeipa, *v.*

karāb (mg), *n.* nostril.

karābu (m), *n.* nostrils.

karaig,

kara-malupa (m), *ad.* a long way down.

kara-nagri (mg), *ad.* enough. (Stone).

karar, *n.* the shell of a turtle.

karar-asin, *v.* to like, to obey.

karauaig = korawaig.

karawaigö = korawaig.

karbai, *n.* an egret; karbai ial, karbai plis, or kaikai, feathers of the egret; (m), the blue heron.

kāreki (m), *ad.* hereabouts. Cf. kö, of which the (m) form would be köre.

karengaigö, *a.* not hearing.

karengemin, *v.* to hear, to listen, to obey. [karengemiziu.]

karget (m), *n.* little finger. (Jukes.)

karingi (r), *n.* a lad during the initiation ceremony. Cf. kërnge.

karmiu, *n.* name of a fish, = karmoi.

karmoi (m), *n.* a fish. *Scatophagus multifasciatus*.

karomat (m), *n.* a brown snake.

karta (m), *n.* the throat, = katö.

karubai (m), *n.* an egret.

karudan (r), *n.* a shell frontlet, a drum pattern.

karum (r, s), *n.* the monitor lizard, *Varanus*; called "iguana."

karumatapi, (karum swimming) *n.* a dance (362).

karuma-gam (r), *n.* the skin of the monitor.

karuma-güngau (m), *n.* the skin of the monitor.

karum-palan (?), betrayed. Mark, xiv. 41.

karusa (mg) = kaura.

kāsa (m), *n.* the bed of a stream, a river. Mai Kasa, Wai Kasa, names of rivers in New Guinea.

kasa, *n.* the pandanus. Cf. kausa.

kasa, *v.* to lend.

kasa, *ad.* only, just.

kasa iagiasin, *v.* to be quiet.

kasa-tabu (s), *n.* a harmless snake.

- kasa-kupal, *a.* naked.  
 kasa-paibanö (B), *n.* a present, gift.  
 kasa-wanan, *v.* to forsake, to leave alone. Mark, xv. 34.  
 kasigig, *a.* childless. Cf. kaziginga.  
 käsür (M), *n.* a salt water creek. Cf. kasa.  
 kat (MB), *n.* neck.  
 kata-kazi (S), *n.* twins.  
 katam, *n.* a bunch, a crowd.  
 katamö, *n.* a banana.  
 katamiz, *a.* narrow.  
 kata-palagis (B), *ad.* upwards. See kat-palagiz.  
 kata-pulgeipa (M), *v.* to jump, to leap.  
 katauoi (T), *n.* the green parrot.  
 kateko (B), *n.* a frog.  
 katö, (N), the neck, throat.  
 kat-palagiz, *v.* to escape, leap. [kadrö palagiz.]  
 katramizö = katamiz.  
 katrö = katö.  
 kawa = kawa,  
 kauburu (S), *n.* a gourd.  
 kaubasin, *v.* to strain, labour; noi iman tana kibu kaubasin kaba nitun, he saw them toiling in rowing. Mark, vi. 48.  
 kaukwik (MB), a young man; the ceremony on arriving at puberty (405). Cf. kernele.  
 kaukwoiku (M), *n.* a young unmarried man after initiation.  
 kaura (M, MB), *n.* the external ear.  
 kaura, *n.* the nautilus.  
 kaura (M), *n.* an island = kawa.  
 kaura-apusö, *n.* the ear hole; ieudan ukasar dimur a ukasar kaura apusö utun nubepa, put his fingers into his ears. Mark, vii. 33.  
 kaura-kikire, *n.* the ear-ache.  
 kauralenga, *a.* possessing ears; ita muamuai kauralenga, the deaf.  
 kaurare (M), *a.* possessing ears; wati-kaurare, deaf (having bad ears).  
 kaura-tarte (M), *n.* a hole in the lobe of the ear.  
 kauru (M), *n.* the laughing jackass.  
 kauruta (M), *n.* bunions.

kausa, *n.* fruit, seed, nut, = köusa.

kausa, kausar, (м), *n.* *Pandanus pedunculata*. Cf. kasa.

kausi (т), *n.* a hawk. Cf. kudzi.

kausur (м), *n.* a flower.

kautüri (м), *n.* a blue crab.

kawa, *n.* an island; people; iau kawa, *n.* a market. [kawapa.]

kawakawal, kawakawial, *n. pl.* islands, nations. [kawakawapa.]

kawakuig, kawa-kuikö, *n.* a young man. Cf. kernele.

kawki (м), *a.* dear (used by a male to a female); see kami.

kawp (м), *n.* a seed.

kawruta,

kazi, *n.* a person, a child; iai kazi, *n.* a scholar, a disciple (lit. a sitting person); *pl.* kaziel, kazil. [kaziu, kazipa, kazingu, kaziae.]

kaziginga, *a.* uninhabited (lit. child not possessing).

kazilaig, *a.* having a child. Mark, vii. 25.

kaziöl, *pl.* of kazi.

keda, *ad.* thus, as, saying; a word introducing a quotation.

keda, *v.* to be like, to resemble; keda aiginga, *v.* to differ.

keda (м), *v.* to cut.

kedamizin,

kedangadanga, *n.* length.

kedangadal, kedangadalnga, *a.* like, like this; noi kedangadalnga umangange, he was as one dead. Mark, ix. 26.

kedawara, kedazingu, keda-zinguzö, *conj.* for this cause, therefore.

kedazou (?), *conj.* for; kedazou mai Joane iamuliz Heroda, for John told Herod. Mark, vi. 18.

kedazöngu (s), because (lit. from the thing thus).

kedazöpa, *conj.* therefore (for the thing thus).

kedazöpuzigöpa (?), kedazöpuzigöpa nidaipa, (who) had done thus. Mark, v. 32.

kegoba,

kei = kai, köi.

kei-gälein (м), *a.* dumb.

kei-gariga (м), *n.* noon-tide (lit. big sun).

ke'ipikai (м), *n.* an old woman, = kai-ipiki.

kei'kuku (м), *n.* the great toe.

keimägi (м), *n.* an associate, a friend. Cf. kernele.

- keinga (m), *a.* large; *ad.* very, = kai, köi.  
 kekêdi (m), *a.* gorged.  
 kekeri, *n.* a bird with red breast.  
 kekermisina (?), purka kekermisina (s), *n.* ophthalmia.  
 keki (m), *n.* a gull.  
 kekôchipa (m), *v.* to forget.  
 kemus = kimus, sabu kemus, *n.* a needle.  
 ke-pramek,  
 kerer (m) = kerer.  
 kererki, *n.* the name of a star. Cf. garig kap.  
 kêrisa (m), *n.* the blue mountain parrot.  
 kerkatö = kêrkêt.  
 kerkatö-palan, *v.* to torment.  
 kêrkêt (m), *n.* anger, rage.  
 kerketale (m), *a.* vindictive, furious.  
 kêrketegerkai (n), *n.* a warrior. Cf. kaigerkitalgaka.  
 kernele (m), kêrnge (n), a lad who is being initiated into manhood.  
 Cf. karingi, zungri, kaukwik, keimagi (405, 409, 433).  
 ketai, *n.* a yam (*Dioscorea*). Cf. kutai.  
 ketal (m), *n.* a thread.  
 ketekete,  
 keuba-tati, *n.* uncle (lit. tati, father, keuba, perhaps for köpa, a little way off).  
 keusa, *n.* fruit, = kausa, köusa.  
 ki (m), an affix of emphasis. Cf. kai.  
 kiamusa (s), *n.* the point of an arrow, = kimus.  
 kibu, *n.* the loins, the lower part of the back; padau kibu, the slope of a hill. Mark, v. 11.  
 kibuka (kibupa), *n.* a mythical island to which the mari of deceased persons go (318). "Hades."  
 kibu-mina, *n.* a totem cut on the small of the back of a woman (lit. loin mark) (368).  
 kicha (mg), *n.* the sun, the moon. Cf. kisuri, kizai.  
 kida (m), *a.* left.  
 kidakida-nagepa, *v.* to gaze.  
 kidakidan (?), tana kidakidan ia uman, they said among themselves.  
 kidö (?),  
 kidö-taeen, *v.* to turn, to overthrow; see kita-toeailai.



kidu-warū (mb), the finish of the turtle (surlangi) season.

kikimizi,

kikira,

kikir, kikiri, *n.* disease, pain, affliction; *a.* sick, ill; kikiri-laig, *n.* a sick person; koiku-kikiri, headache; dang kikiri, toothache; kaura kikiri, earache.

kimus (s), *n.* an arrow.

kin (mb), *n.* a creeper used in making makamak.

kirer, *n.* an artery, a vein, a sinew.

kirkup, *n.* a nose ornament. Cf. gigu.

kisigan (mg), *n.* a mountain. (Stone).

kĩsuri (m), *n.* the moon.

kita-tōeailai (?) to be converted. Mark, iv. 12. See kidō-taeen.

kizai (s), *n.* the moon.

klak-nitu (s), klak-nětoi-gět (mb), kalakö-nitu, *n.* the index finger; the number four in counting on the body.

kö, *n.* a place near, a little distance. Cf. kareki. [köu, köpa, kozi.]

koakan, *a.* round.

koam = kaman, kuamö, fever. Mark, i. 31.

koamala-nagiz,

köamapa, *v.* to warm oneself; nadö Petelun iman muingu köamapa, she saw Peter warming himself.

koamasin = kuamö, asin; körkak koamasin, sore amazed. Mark, xiv.

33; gamu koamasin, *n.* fever (lit. with hot body).

kob (n), *n.* the tail of a dog. Cf. kouba.

koba (m) = kob.

kobai (m), *n.* the throwing stick (334). Cf. kubai.

kobai-ngur (mb), *n.* the peg or hook of the kobai.

kobai-piti (m), *n.* the peg of the throwing stick. Cf. ngurr.

kobaki (m), *n.* a cough.

kobaris (m), *a.* unripe, uncooked.

kobebe (mb), *n.* a bird (Legends, p. 29).

kobegada, *a.* this kind. Mark, ix. 29.

kobi (n), *a.* black.

köbia (?), tana ladun a maumizin köbia gulugul, they went forth and preached everywhere. Mark, xvi. 20; noi gurugui uzar köbia gurugup ngurupaipa, he went round about the villages teaching. Mark, vi. 6.

- kobikobi (τ), *n.* the charred shell of the coconut, charcoal; kobikobi marukai *or* gümüle (μ), black men. Cf. kubi.
- kobikobigämol, kobikobigömöla (τ), *a.* black. Cf. kubikubinga.
- koboi-nguru (μβ), *n.* the hook of the kobai, = kobai-ngur.
- kobu, *n.* war, enemy, battle, = koubu.
- köbura (β), *n.* a lime gourd. Cf. Mir. kabor.
- kodal, *n.* a crocodile, = kudal.
- ködu, *n.* a part.
- kogwoi (μ), *n.* the throwing stick. Cf. kobai.
- köi, *a.* large, great, big; *ad.* very, = kai, kei.
- koi-aböu (koi-iaböu), *ad.* with a loud voice.
- koi-ad (s), *n.* an anchor.
- köi adumeipa, *v.* to rave.
- köi-gakazi (s), *n.* a chief.
- koigaraka, *n.* a chief.
- koi-gërza = köi-görsar.
- köi-görközi, *n.* a chief; köigörközi wakaiauiamoin, chief priests.  
Mark, xiv. 55.
- köi-görsar, *a.* many.
- koi-ia, *a.* loud (lit. big voice).
- koiko-dīm (s), *n.* the thumb (lit. head-finger).
- koik-patan = kuikö-patan.
- koikoro, *n.* a head-dress worn by young men, a pattern on a drum.
- koiku (μ), *n.* the head = kuikö.
- koiku-kikiri, *n.* head-ache.
- koikutalnga, *a.* long, high, tall (having big ends).
- koim, koima (s), *a.* many, much.
- köi-magaulnga, *a.* strong.
- koi-magu, *n.* a bunch.
- koimai (τ), *n.* the scarified mark on the shoulder.
- koi-maita (β), *n.* the gizzard of a fowl (lit. big stomach).
- köi-malu, *a.* deep (lit. big sea).
- koi-mapu-bodali, *a.* sick.
- köi-mapunga, *a.* difficult, heavy (having great weight).
- köingar, *n.* elephantiasis of the leg (lit. big leg).
- köi-ngona-poidan, *v.* to sob.
- koiop, = kuiöpa.
- köi-pui, *n.* a log (lit. big wood).

köiridanga, köiridangö, *a.* hard (lit. very bony).

köisarköisar (?), Pilato köisarköisar korkak banitan sisike nöi umanga,

Pilate marvelled if he were already dead. Mark, xv. 44.

köisigal, *a.* far, remote; köisigapa, *ad.* afar, to a distance.

köi-sigazi, *ad.* from afar.

koi-wamen-udiz (*s*), *n.* ebb tide.

koi-za, *a.* big, large, great (lit. large thing).

koi-zarasan.

kokam, kokan, *n.* a ball.

kökaper, *n.* a spark.

kokata (*m*) = kwokata.

koki (*m*) = kuki.

koki, *n.* the season for turtle feasts. Cf. kuki.

koko (*m*), *n.* the foot. Cf. kakura, kuku.

koko-geta.

koko-kaleri (*m*), *n.* the sole of the foot.

koko-moi (*m*), *n.* the sole of the foot.

koko-moka (*m*), *n.* the sole of the foot.

kola (*m*), *n.* a rock, = kula.

kolab (*x*), *n.* the shoulder-blade, or scapula.

kolam (*m*), *n.* the shoulder-blade.

kölan (*mg*), *n.* the shoulder.

koli (*mb*), *n.* a paddle when used for steering. Cf. kuli.

kolkar, (*m*), *n.* blood, = kulka.

kolo (*m*), kolu (*m*), *n.* the knee, = kulu.

kömaköma (*s*), *a.* separate, opposed to; ngalpalpa kömaköma maiging,  
not against us.

komalenga, *a.* hot, = kuamalnga.

kömi (*x*), *exclam.* I say! Look here! (see kami, kawki, kaki).

könamiz, *v.* to spy.

kon, *n.* corn (English word corn); konau-apö, a corn-field.

konga,

konil, *n.* a bundle of arrows.

köpa. Cf. kö,

köpazi, an error for közipa. Mark, viii. 1.

kopér (*m*), *n.* a tree.

kopi, *n.* the half, a lump.

kopuru (*m*), *n.* a fish, whiting (*Silago*).

- kora (τ), *n.* a crocodile, = kodai, kudal.  
 korabu (м), *n.* the septum narium.  
 korawaig, korawaigö, *v.* to be unable, cannot.  
 kōrēkida (м), *ad.* a long time ago.  
 kōrkak, *n.* the throat; the seat of the affections, the mind. [korkaknu  
 korkakönu.]  
 korkakö-badö, *v.* to sigh. Cf. korkak, badö.  
 korkar (s), *n.* the mind.  
 korkor, (м), *n.* a crow.  
 kōrngazinga, *n.* things heard. See korongaipa.  
 koro,  
 korongaigigo, *a.* deaf, = karengaigö.  
 korongaizinga, *v.* not to hear, = karengaigö, korongaigigo.  
 korongaipa, *v.* to hear.  
 korökak = kōrkak.  
 körpusōnga, *a.* tender; nongo tamo körpusōnga, when its branch is  
 tender. Mark, xiii. 28.  
 kōrsi, *n.* the hammer-headed shark (*Zygana*).  
 kōru, *n.* a corner. [körupa.]  
 korul, *n.* the heel.  
 kosa (mb), *n.* the sternum. Cf. dadir.  
 kösa, *n.* a river, = käsa; kösa Ioridana, river Jordan; kösa Galilaia, sea  
 of Galilee; mai kasa, Pearl River. Cf. native names of places.  
 kōsi (?) = kazi. See next word.  
 kōsiman, *v.* to rear, bring up.  
 kosiman (?), noi iaumizi tanamulpa nianö kosiman tana senabi  
 imusö maludōnga, he commanded them to make all sit down  
 by companies on the green grass. Mark, vi. 39.  
 kota-dimu (s), *n.* the little finger.  
 kota-get (moa), *n.* the little finger.  
 kotaig (Badu) = last.  
 kōtale (м), *a.* long, high, tall.  
 kōteko (в), *n.* a frog, = kateko.  
 koto-dimura (mb), *n.* the little finger; kotodimura gorngozinga (or  
 guruzinga), the fourth finger.  
 kōtuka (?), keda ngadalnga sinapi kōusa a utun kulai şena mina kōtuka  
 mina kōusa kōizaina apal, like a mustard seed which when it is first  
 sown is less than all the seeds that be in the earth. Mark, iv. 31.

köu. Cf. kö.

kouba (s), *n.* the tail of a quadruped, = kob.

kouba (s), *n.* war, battle, an enemy.

kouba-laba (s), *n.* the tail of a bird.

köubu = kouba.

koulka (m), *a.* red. Cf. kulka.

koupapa (s) = koupupa. Cf. kouba.

koupupa, *n.* a warrior, a soldier.

köusa, *n.* fruit, seed, = kausa. [köusan, kösangu.]

köusalenga, *a.* possessing fruit; in Mark, xi. 13, a mistranslation for nisalenga.

közi, *n.* = kazi, *pl.* köziel. [köziu, közipa, közingu.]

köziginga, *a.* = kaziginga.

krabu (m), *n.* nostril.

krameipa (m), *v.* to steal.

krangipa (m), *v.* to hear, to understand, = korongaipa.

krar (m), *n.* a mask. Cf. buk.

krem (m), *n.* the white heron.

kris, *n.* a parrot.

kua,

kuai (m), *n.* a red berried *Eugenia*; the crown of the head.

kuamalnga, *a.* hot, warm (lit. possessing heat).

kuamö (v), *a.* warm (see kaman), hot; *n.* heat.

kuato,

kubai (v), *n.* a throwing-stick; a sling (Macfarlane). Cf. kobai.

kubaki,

kubi, *n.* charcoal, touchwood. Cf. kobikobi.

kubi (m), *a.* many, plenty

kubiger,

kubikubinga, *a.* dark, black.

kubil, kubilö, *n.* night, darkness; *a.* dark.

kubilu = kubilö.

kubirk (mg) = kobaki.

kuchi (m), *n.* a rattan.

kudal (s), *n.* a crocodile, = kodai.

kudapa = kutapa.

kudrugü, *n.* a small dove.

kudu, kudru, *n.* the elbow; the number 7 in counting on the body.

kudu (?); noi balbaigi iangu kudu taeen, he spake plain. Mark, vii. 35.

kudul, *n.* the elbow, = kudu.

kuduman, *v.* to admit, to accede to. [kudumamain.]

kudzi-kwik (τ), *n.* a carved wooden bird's ( ? hawk's) head for decoration of a canoe. Cf. kausi.

kugi (μ), *n.* the young of sapur.

kui,

kuiai (?), kuiai torik, kuiai turik, *n.* a sword. Mark, xiv. 45, 47.

kuibur (?), kuibur torödiz, *v.* or *a.* tame.

kiüür (μ), *n.* a mangrove.

kuik = kuikö.

kuika-iman, *v.* to begin, to commence.

kuika-longa = kuikulenga, etc.

kuik-gasamiz, *v.* to wail.

kuikö, *n.* the head; the skull.

kuikö-patan, *v.* to behead.

kuik-taeen, *v.* to nod.

kuiku = kuikö; kuiku ipi, *n.* a chieftainess. [kuikupa, kukungu, kuikunu.]

kuiku, *n.* root. [kuikungu, kuikunu.]

kuiku-dimö, *n.* the thumb; the number five in counting on the body.

See koiko-dim.

kuikui,

kuikuiga, *n.* brother. [kuikuigau.]

kuiku-kikiri, *n.* head-ache.

kuikukazi, *n.* brother.

kuikulenga, kuikulnga, kuikulönga, *a.* chief.

kuikulumai, *n.* a lord, a chief, master; kuikulumai vine apangu, *n.* the lord of the vineyard. Mark, xii. 9. [kuikulumaipa, kuikulumaingu.]

kuikulunga, *a.* chief. [kuikulungae.]

kuiku-öimo = kuikaiman.

kuikutanga (β), *a.* tall.

kuiku-waipa, *v.* to talk over to take counsel, usually with ia preceding. noi ia mura kuikö waipa tana mulpa, he expounded all things to them. Mark, iv. 34.

kuioäpa (β), *n.* the dragon fly.

kuisimi, *n.* height.

kuiur (м), *n.* the dart of the dugong harpoon (wap). Cf. kwiuro.

kuki, *n.* the West wind; the North West monsoon; the rainy season; winter; spring (Macfarlane). Cf. koki.

kuki-dogam (s), *n.* the West.

kuköpalan, *v.* to save (?), mi mabaeg nongo igilenga koi kuköpalan, whoever will save his life. Mark, viii. 35.

kuku (м), *n.* the foot, toes.

kukuama, *n.* a flower, a blossom; kukuamnge. Mark, iv. 28.

kukuiközipa, *dat.* of kuikukazi. Mark, xiii. 12.

kukule (м), *n.* an elder brother or sister.

kukuna-mapeipa (м), *v.* to kick.

kukup (м), *n.* the buttocks. Cf. keep.

kukutalinga = koikutalinga.

kul (м), *a.* first.

kul (м), *ad.* two or three days ago; mata kul (м), *ad.* about a week ago.

kula, *n.* a stone, rock. [kulapa, kulann.]

kula (м), *n.* flat stones with faces painted on them connected with ancestor worship (321).

kula (s), *a.* red.

kulai, *v.* to precede, to go before.

kulaikulai, *ad.* before.

kulai-tai, *v.* to advance, to go before, to pass by. [kulaitaiz.]

kuläle (м) = kotale.

kuläle (м), *a.* stony.

kulau-amai, *n.* lime (lit. oven of stone, i.e. burnt coral).

kulba, kulbang (м), *a.* worn, old from use, ancient.

kulbulo (B), *n.* an owl.

kuli, *n.* the steering board of a canoe; kuli-toidiz, *v.* to steer. Cf. koli.

kulka, *n.* blood; kulkale (м) *a.* bloody; kulkthung, *a.* red. [kulkau.]

kulkadagomola, *a.* red, blood colour.

kulka-ieudiz, *v.* to bleed, to pour blood.

kulkale, *a.* from kulka.

kulkau (s), *n.* blood.

kulkuigau,

kulkulkuma (B), *n.* dysentery (lit. bloody excrement).

kulapi (м), *n.* a large bean, = kalapi.

kulpa (s), *a.* old, = kulba.

kulu, *n.* the knee.

kulu-damanu,

kuluka = kulka.

kulukal, *a.* red, purple.

kulukubö, kulukubu, *n.* a long time.

kulun-tariz, *v.* to bow the knee. Mark, xv. 19.

kuma, *n.* dung, excrement, rust.

kumakuma (s), *a.* secret. See kumi.

kumar (mb), name of a plant used in the initiation ceremonies (399).

kumaskumas,

kumete, *n.* a bushel. From the Samoan 'umete viâ Lifu kumete.

kumi (s), *n.* a secret. Cf. gumi.

kun, *n.* the hinder part; gulngu kun, the hinder part of the ship.

Mark, iv. 38.

kunakanange (s), *a.* strong, tough (of cloth).

kunamin,

kuna-poibiz, *v.* to groan, to moan.

kunarö (B), *n.* lime; mainö kunaran paruia nidizö, made mourning with faces of lime. Mark, v. 38. See Introduction to Saibai Grammar.

kunia (? from kun), noi ubigösia kunia onailai, he would not reject her. Mark, vi. 26.

kunia-tidiz, kunia-tridiz, *v.* to return.

kunumeipa (M), *v.* to tie.

kunur (M), *n.* ashes.

kuote (mb), *n.* the back of the head.

kup (mb), *n.* the buttocks. Cf. kukup.

kupa (M), *n.* a white berried *Eugenia*.

kupa (M), *n.* the hip; maita kupa *n.* navel.

kupadö, *n.* a bay.

kupai, *n.* a share, = kopi.

kupai (s) = kupor,

kupalabö (B), *n.* a tail.

kupal baba (B), *n.* a tail feather.

kupalenga, *a.* from kupar, ngau kupalenga, I pity; woe. Mark, xiii.

17.

kupa-luba (M), *n.* the tail of a bird.



kupar, *n.* the navel. Cf. Mir. kopor.

kuparö, *n.* a worm.

kupe (r), *n.* a medicinal plant.

kupor (s), the umbilical cord. Cf. kupa, kupar.

kupur, *n.* the navel.

kupuza = kapuza.

kupwa,

kurdai (r), *n.* a kind of native rope. Cf. kwodai.

küri (m), *n.* a gum tree. (Jukes.)

kurkagamulnö (b), *a.* red. Cf. kulka, gamu, kulkadagomola.

kursai (r), *n.* the ear, = kaura.

kursimi (s), *n.* a height. Cf. kuisimi.

kurtumiz *v.* to scratch; *n.* itch.

kurtur (m), *n.* a worm; (s), *v.* to crawl.

kuru,

kürugat (b), *n.* the post of a house.

kurusipa, *conj.* until.

küsa (b), *n.* a river. (See käsa).

kusa, *n.* *Coix lachrymar*, Job's tear seeds, *pl.* kusal; (hence a bead); a belt made of these seeds (m); kusa duru (m), a bead band worn on the wig.

kusa kap, *n.* a mythical gigantic bird, born parthenogenetically from a woman. (Legends, i. 3.)

kusaig, kusaigö, *n.* self; *a.* alone.

kusal, *n.* a necklace (lit. beads).

kusali (m), *n.* the Pleiades.

kusu (mb, m), *n.* a coconut water-bottle.

kusu kusulaig (mb), *n.* a broom, the dance name of piwul (404).

kut, *n.* the neck.

kut (m), kuta (s), *n.* evening, afternoon, = kutapa. Cf. kutö.

kuta, *n.* the end, = kuto.

kuta-dimur, *n.* the little finger.

kutai (m), *n.* a fibrous yam (*Dioscorea*). Cf. ketai.

kutaig, *n.* a younger brother or sister; *pl.* kutaigal. Cf. kutö.  
[kutaigou.]

kutaigan-nge,

kutal, *n.* length.

kutalnga, *a.* long.

- kutam (?), kutam titui, a species of hawk.  
 kutāpa, *n.* the evening. Cf. kut, kuta.  
 kutapatai,  
 kutaui,  
 kutö (s), *n.* the end, extremity of anything; kabudan senabi pudau  
     kutanu, put on the end of a reed. Mark, xv. 36.  
 kutōka (s), *n.* the end, = kutö.  
 kutra, *n.* evening, = kuta. [kutanu.]  
 kutrapa = kutapa.  
 kutuman = kuduman.  
 ku-u-rug (m), *n.* the ground dove.  
 kuza. Mark, ix. 5. Apparently a misprint for kapuza.  
 kuzi (r), *n.* a species of hawk.  
 kwai (m), *n.* top of the head (?).  
 kwaimai (b), *v.* to scarify, to cut the skin so as to cause a raised  
     cicatrix. (366.)  
 kwāli (m), exclamation to arrest attention.  
 kwalamö (b), *n.* the shoulder blade. Cf. kolam, kolab.  
 kwāsur, (quassur Macgillivray) (m), two, = ukasar.  
 kwateia (m), *n.* the back of the head. Cf. kuote.  
 kwēāda (m), *n.* the gromets on the backstays of a boat.  
 kwig (r), *n.* the head or skull, = kuikö.  
 kwik (mb) = kwig; merkai kwik, a head-dress used in the funeral  
     dance; kwik'uro (m) *n.* the general term for a fillet worn on  
     the head. Cf. uro.  
 kwir (s), *n.* a fight.  
 kwitoaeān (quitoaeān), *v.* to lose.  
 kwuiuro, *n.* the dart of a dugong spear "wap." Cf. kwoiōro, kuiar.  
 kwod, *n.* the house set apart for men, or the open space in which  
     sacred ceremonies take place. Mir. siriām; taiokwöd (r),  
     *n.* the sacred meeting place for the initiation ceremonies  
     (409).  
 kwodai, *n.* twisted native rope.  
 kwoiōro (mb), *n.* the dart of a wap or dugong spear (351).  
 kwoikwig (b), first.  
 kwokata (m), *n.* a frontlet of coco-palm leaf.  
 kwual, *n.* a curlew.  
 kzöiöl = kaziöl.

L, *suffix* denoting the plural of nouns.

labaipa (м), *v.* to cut. [laban, lapan.]

ladeipa (м), *v.* to tear.

ladiak (мг), *n.* a chief. (Stone.)

ladon,

ladu, *v.* to go. [ladun.]

laelö (?), *kuikaiman tanamulpa waeen mata ukauka laelö*, began to send them forth two and two. Mark, vi. 7.

laga (м), *n.* dwelling place, hut, house. *pl.* lagal. [lagau, lagöu, lagapa, lagöpu, lagöngu, lagönu, lagia, lagonge.]

lagilaig (s), *n.* countryman.

lagö (s), *n.* house, dwelling-place, land. See laga.

lai, *suffix*.

laigö, laig (s), *n.* country, island, place.

laig, *suffix* denoting persons in a group, a clan, a sect, a tribe.

laka (м), *ad.* again, = lakö.

lakadanö (в), *n.* war.

lako, lakö, *ad.* more, again.

laköboi (в), *v.* to return. Cf. lakö, boie.

lakonge = lagönge.

lalkai (м), *n.* a lie Cf. ngölkai.

lalkeipa (м), *v.* to lie, to be false; piki lalkeipa (м), *v.* to dream.

lameipa (м), *v.* to copulate.

lapan, see labeipa.

laulau, *n.* a table (introduced from Samoa *vid* Lifu). [laulauiu.]

launga (s, в), *a.* no, not; mata launga, *a.* absent.

laungamaingina (?). Mark, ix. 38. Apparently the two negatives with adjective termination.

laungaman, launga, mani (s), *v.* to repudiate, to rebuke, to refuse. [launga mizin.]

le (м), a plural *suffix* to nouns.

le (м) = li.

leara, *n.* a species of cashew (*Anacardium*) (308).

leg (м), *suffix* denoting possession.

lenga, *suffix* to adjectives denoting possession.

li (мб, s, м), *n.* a basket made of the leaves of the pandanus.

liwak, *n.* the chameleon.

logi (м), *prep.* near, close to.

logö = lagö.

löia (s), *n.* the tongue. Cf. noia.

lökof (mb), *n.* medicine; sorcery. Cf. gouga, maid, and Mir. lukup.

lōnga (s), *n.* colour.

longa (m) = launga.

lorda, *n.* the shell worn on the groin when fighting. Cf. alidan.

luba,

lubu (?). Mark, xi. 15, niai za lubu ngorotaran, overthrew the tables of the money changers.

lulko (m), *n.* a large palm (*Seaforthia*); a water basket made of its leaves.

lumadö (?), sana-lumadö (s), *n.* the instep.

luman (s), *v.* to seek, to search, to guess.

lunga (s) = launga.

lunuranö, *prep.* around.

lupalan, be of good cheer (?). Mark, vi. 50.

lupaliz, lupalizö, *v.* to be astonished, to marvel.

lupeipa (m), *v.* to shake.

lurug (m), *n.* the haunch bone.

luwaiz (s), *v.* to be cured.

luwaeen (s), *v.* to shave.

Ma (s), *n.* a spider, a cobweb.

mabaginga (?), mekatia mabaginga, not shine abroad. Mark, iv. 22.

Probably mabaeg with the negative *adj.* termination, not having men, where men are not.

mabaeg, mabaegö, *n.* man; *pl.* mabaegal; ngurpai-mabaeg, *n.* disciple;

köi zōngu ubi mabaeg, one who covets. Mark, vii. 22.

[mabaegau, mabaegöu, mabaegan, mabaegöpa, mabaegangu, mabaegengu, mabaegöngu, mabaegia, mabaegae.]

mabaegögi, mabaegöginga, *a.* deserted, having no men; mabaegögi lagö, a desert place.

mabaeg-purtan, *n.* a cannibal, man-eater.

mabagi = mabaeg.

mabarö (s), *n.* the windpipe.

mabetö, *n.* a baby.

mabi (m), *n.* the tail of a fish.

mabiag, *n.* man, = mabaegö.

mad, mada, *n.* pudendum muliebre.

madale (м), *a.* female (lit. possessing mada).

madi, *suffix*, by (Macfarlane).

madu (м, в), *n.* flesh; *pl.* madul, thigh (Macfarlane); hip (в); thigh (в); bru-madu (м), *n.* calf of leg; wapi madul, flesh of fishes.

Mark, vi. 41.

madubö, *n.* a charm, an image or idol.

madugi (?). Mark, ix. 42.

madugö, *n.* a fine; *v.* to fine.

madu-paman, *v.* to start, be startled. [madu-pamemin.]

madu-pawizo,

mae (м), *n.* the bark of which daje is made.

mael, *suffix*.

mag (т), *n.* sweat. Cf. mörög.

magao (s), *n.* strength.

magaolnga, *a.* strong.

magëda (м), *n.* hair of groin; guda magöda, *n.* moustache.

magi, magina (s), *a.* small; magina-kazi, child; magina-ipikazi, girl; magina-malil, a nail; magina turikö (в), tomahawk.

magisö (в) = magiz, *v.* to spew.

magi-tiom (s), *n.* boy; *pl.* magi-tiomal.

magiz, *v.* to vomit.

magö, *v.* to perspire; *n.* sweat.

magus (s), *a.* enduring. (Perhaps a ms. error for magao).

mai, *n.* pearl-shell; maidan, a pearl-shell eye inserted in a skull.

mai (s), *n.* sake; Herodian mai Filipon ipi nongo kutaig, for the sake of Herodias, his brother Philip's wife. Mark, vi. 17.

mai (s), a well, pool.

mai, *v.* to mourn; *n.* tears. [maidö, mainö.]

mai-adan (s), maiadi (в), *v.* to weep, put out tears.

maid, maidid, *n.* sorcery. Cf. lokof, purapura.

maideg (т), *n.* a small grass petticoat, big in front and behind, imported from Mowat. Cf. Maiwas.

maidëlaig (мб), *n.* a sorcerer.

maierchipa (м), *v.* to cry, howl like a dog.

maige (м), maigi (s, в), *v. imper.* don't! do not!

mainginga (?), Iesu nubepa kudu mainginga, Jesus did not allow him.

Mark, v. 19.

- maigu (s), blind; *v.* to shut one's eyes (B).  
 maiguma, maigumua, *n.* a blind man; senabi maigumau getö, the blind man's hand. Mark, viii. 23.  
 mai-id, *n.* sorcery, = maid.  
 maikö (B), *n.* widow.  
 maikuik, maikuikö, maikuika (B), = markuikö.  
 maingu,  
 mainguzi (s), *n.* birth; nongo mainguzi goiga, his birthday. Mark, vi. 21. Cf. mani (B).  
 maipa (s), *v.* to bring.  
 maipa (?) mipa ngidö ngona mina mabaega dö maipa, why callest thou me good? Mark, x. 18.  
 maita, *n.* the belly, stomach; bowels (B); koimaita (B), *n.* gizzard of a fowl; kai maitalnga (B), *a.* corpulent.  
 maita-iginga, *a.* hungry; *v.* to starve.  
 maita-kupa, *n.* the navel.  
 maitäleg (M), maita-laig (s), *a.* pregnant; *n.* pregnancy.  
 maitarun, *a.* filled with food. Cf. maita, irun.  
 maitui (?) tanamun puruka maitui, their eyes were heavy. Mark, xiv. 40.  
 maiwa (M), *n.* the great clam (*Tridacna gigas*).  
 maiwa (N), *n.* the performers at a ceremony during the wangai season. Of these there were two (magina and kaiza) who danced in front of a waus. (321.) Cf. kamus.  
 maiwas (T), *n.* a small leaf petticoat imported from Mowat, small in front. Cf. maideg.  
 maiwazo (Mb) = maiwas.  
 maja (B), maji (M), *n.* a coral reef.  
 mak (M), *n.* a breakwind of bushes.  
 makamak, maka (M), *n.* narrow, circular, twisted leg ornaments, from one or two to thirty or more in number, worn round the leg just above the calf.  
 makasö, *n.* a mouse, a rat. Probably introduced.  
 makiam, *n.* a scream; makiam ieudan, wondered. Mark, vi. 51.  
 makikak = makamak.  
 makupui (B), *n.* a flag.  
 makuz (M), *n.* a mouse, = makasö.  
 mal (M), *n.* deep water, = malu.

mälakai, *n.* a word employed by the South Sea teachers for spirit, ghost, etc., *i.e.* merkai or markai, the *r* is changed into *l*, and a vowel is inserted between the two consonants.

maladugomola, *a.* sea colour, blue.

malapan (mg), *n.* the moon, = malpal.

malegui = malgui.

malegui (m), *v.* to fill (with a fluid).

maleguia-adan, *v.* to spring up, of plants; to put out a stem.

maleipa, *v.* to fill with a fluid. Cf. mal, malegui.

malgui (m), malegui, spring, autumn; *v.* to grow (s); *n.* blade of grass; a stem (s); a stalk; malegui kai palgin, a stalk will come up. Mark, iv. 32.

malil (s), metal; malil dibidib, brassen vessel. Mark, vii. 4, malil urukam, *n.* a chain.

malila (b), a fish spear.

malö (b), *n.* a passage in the reef.

malpal, malpel (s), *n.* moon.

malpamiz (?), tana ina gar malpaniz senabi zapunu, they that trust in riches. Mark, x. 24.

malthagamule (m), *a.* blue; sea colour. Cf. maladugomola.

malu (s), *n.* the sea. [malupa, malunu.]

maluda (b), blue,

maludönga, maludunga (b), blue, green (lit. sea colour); imusö maludönga, green grass. Mark, vi. 39.

malulonga,

malupa (m), *ad.* below, downwards; kara malupa (m), *ad.* far below.

mamain, *v. pl.* from mani, take; kudu mamain, they took counsel.

mamal, mamalenga, *a.* holy.

mamamoizinga, *n.* things taken.

mamu (s), *ad.* well, carefully; mamu-ngurpa, *v.* to perceive; mamu danal-pataipa, *v.* to take heed.

mamus, *n.* a chief or head of an island. This is a Miriam word and introduced. Cf. Mir. Voc.

manamoizinga, *a.* joined.

mana-rimal (s), *a.* few.

mang (m), *n.* a branch.

manga, *conj.* but.

mangainginga, *v.* not to come.

mangemin, *pl.* of mangizö; kulai mangemin, overtook, overwent.

Mark, vi. 33.

mangepa (m), *v.* to return. Cf. mangiz.

mangi, *v.* to come. Mark, ii. 20.

mangiz, mangizö, *v.* to come, arrive, to overtake. [mangeman.]

mani (s), *v.* to give, bring, take, fetch, remove.

mani, *suffix*, by.

mani (b), *n.* birth.

mani, *n.* money. An English word. [maniu.]

mani-angan,

maninginga, *a.* having no money. (mani = English money).

mapa (m), the gums. Cf. Daudai mapu, base, foundation.

mapar, *n.* the teeth (Macfarlane). Cf. mapa.

mapeipa (m), *v.* to bite.

mapeia (?) kukuna mapeia, (m), *v.* to kick.

mapetö (s), *n.* a baby, *pl.* mapetal.

mapu (m), *n.* weight; nongo korkak mapu poidiz, he was displeased.

Mark, x. 14

mapule (m), *a.* heavy.

mapunga (s), *a.* difficult, heavy.

marama (m), maramö, (b), *n.* a hole in the ground, a grave, a pit; a well.

marama-teipa (m), *v.* to put in the ground, bury, plant, sow.

maramatai-lagö, marama-töiai, *n.* a tomb. Mark, v. 2., vi. 29.

marama-toiaipa (s) = marama-teipa.

marap (m), marapi (m), marapö (b), *n.* a bamboo, = morap; a bow.

mari (m), *n.* pearl-shell; an ornament made of pearl-shell. Cf. mai.

mari, *n.* a spirit, a ghost, the soul, a shadow, a reflection; mario-kwik (r), a leafy mask used in the funeral ceremonies; *pl.* maril. [maringu.]

maridan (s), maridanö (b), glass, a mirror, a telescope; maridan dibidib, cup. Mark, vii. 4.

mari-gëta (mb), (spirit hand), *n.* the person who watched a corpse during the first night after death to see if anything happened (402, 421).

marilaig (s), *a.* possessed.

mariman (s), *v.* to pine away (lit. become a spirit).

mari-o-kwik, cf. mari.



markai, *n.* a spirit, a demon, a white man. Cf. merkai.

markei (M), *n.* a heavy cumulus cloud.

markuikö (s), *n.* a generation.

marökai = markai.

maruk, *n.* fowl (European). Probably introduced. Malay or Polynesian manu.

marukai (M), *n.* white man; kobikobi marukai (M) *n.* a black man.

masia-tödimisö (B), *v.* to smile.

māt (M), *n.* pumice; mata (Mg), *n.* a stone.

mata (M), *ad.* always, constantly, still, only; a prefix expressing a continuance of the action of a verb.

mata (s), *a.* legal.

mata (s), *a.* equal, only; *conj.* but, for.

mata-bangal (M), *ad.* a week or so hence.

mata-döbura (s), *ad.* immediately, quickly, fast.

matadödalö (B), *ad.* inland.

matakazupa (s), *conj.* but.

matakeda (s), *a.* like to, similar.

matakul (M), *ad.* a week or two ago.

matalaunga, *a.* absent.

matama (s), to beat, strike; to kill. See matupeima.

matamari, *n.* a bruise.

matamiz,

matangadagidö (s), *a.* worthy, equal to, alike, same, even, uniform

matangadagidigingä, *a.* unlike.

matar, matarö (s), mataru (B), *n.* calm.

mater (? = mata). Mark, iv. ii.

matö, *n.* a joist.

matu (M, s), *n.* a whale.

matumeipa (M), *v.* to strike, to beat, to kill; umalizö matumeipa (M), *v.* to wound.

maumisinö (B) = maumizin. [maumizineka].

maumizin (s), *n.* preaching.

maura (M), *n.* a hundred. Cf. mura.

mausa-usal (M), *n.* a scarified mark on the cheek (367).

mauwaigörk (N), mauwaigörko (T), the instructor of a lad during the initiation ceremonies (411).

mawagö-laig (s), *n.* adultery.

- mawcha (m), *n.* saliva. Cf. Mir. mos.
- maza (m), *n.* the palm of the hand or the sole of the foot. Cf. koko-moi.
- mazan (r), *n.* reef.
- mazar (?), Mark, v. 15. mazarpagan, mazarpagizö, sore amazed.
- meakata (b), *a.* bright. Cf. meketia, mekata.
- meamai (b), *v.* to go in.
- meamaipa, *v. pl.* to do.
- meamöipa, *v.* have done (*pl.*).
- mee (mg), *n.* heaven.
- megi (mg), meik (r), *n.* white.
- megö (b), *n.* a lime spatula.
- meipa (m), *v.* to take away.
- mek (r), *a.* white, = meik.
- meka (s), *v.* to wish.
- mekata (s), *n.* radiance. See meakata, meket.
- mekataasin, *n.* glory. Mark, x. 37.
- mekatia = meket, meketia.
- mekenmepa, *v.* to like, to wish, to want. Cf. mokenmepa.
- meker (m), *n.* a tree (*Heritiera*). The leaf, when rolled in to a cylinder, is used to distend the lobe of the ear.
- meket, meketia (s), *v.* to shine. Cf. meakata, mekata.
- mekikula (mg), *n.* a canoe (Stone).
- melpal (mg) = mülpal.
- memain, *pl.* of mizin. Mark, vi. 32, 33; viii. 10.
- menarö (m) = mina.
- menir (m), *n.* the stern of a canoe.
- mepa, *v.* to do.
- mepaia, *n.* the world (?); mepaiangu mai, for the world's sake. Mark, iv. 17.
- merkai, *n.* a white man (m), a spirit, the death dance; the flesh of a corpse (mb); merkai mud (mb), the store-house of a maidelaig; ipika merkai (mb), a man in the dance dressed as a woman (403); merkai kwik (mb), the head dress used in the dance (403); turkiam merkai (n) (421). Cf. markai.
- mēt, *n.* a fin.
- mi, *prefix*, the root of miei or midö, used as an interrogative. Cf. migöiga, miza, mimabaeg.

miai (B) = miei.

miäkula (M), *a.* grey; any light tint; miakali (Mg), *n.* white.

mida-kubi (M), *ad.* how many?

mideipa (M), *v.* to build, as a hut. Cf. möidai.

midö (M), *pron.* what? which? how? in what manner?

midöparu, *ad.* how? (Macfarlane.)

miëi (S), *pron.* what? [miëinge. Mark, viii. 36.]

miëimiëi (?), *pron.* which of two? what? whether?

migöiga, *ad. interrog.* when? what day?

milagnu, *ad.* where? in what place?

miilo,

mimabaigö (B), what man? who?

mīna (M), *a.* perfectly good, true (S, B); mīna (M), *a.* precious, right;  
*n.* truth; tusi mina, Bible; mina get, right hand.

mina, minar, *n.* a mark; susu mina (M), on the breasts; kibu mina  
(M), on the loins (367).

minai-pataman (S), *v.* to confess, to show.

mina-man (S), *v.* to measure, to span; *n.* an example.

minananga (S), minanenga, *a.* righteous, holy.

minar, *n.* colour (Macfarlane).

minara (T) = mina.

minapa (?), ngalpa Augadan baselaia mi ngadalnga minapa, we liken  
God's kingdom to what? Mark, iv. 29.

minara-pölai, minarö-pölai, minar-palai, *v.* to cut or make a mark, to  
write.

minarpölainga, *v.* not to write.

minasizinga, *n.* a custom; *v.* to accustom.

min'azipa (M), *v.* to finish, said of men's work.

mineipa (? *v.* to mark); kaba mineipa (M), *v.* to dance.

minera = mina; tru minera (T), *n.* a mark on the side of the face.

minga (S), *pron.* what?

mingadalnga, *a.* like what? of what kind?

mingu, *ad.* why?

minguzö, *ad.* why?

mipa (M), *ad.* why?

misai (S), *ad.* yes.

mita, mitö (S), *n.* sweetness, taste; mita poitom (S), *a.* brackish.

mitainga (S), *a.* sour, tasteless.

mitäle, mitalenga, mitalnga, *a.* sweet, tasty; g'ru tha mitäle (м),  
*a.* sweet tasted; adabada mitalnga (B), *n.* brackish water.

mitinit, *n.* a chain.

mitö (м), *n.* taste. Cf. mita.

mitun,

miza, *interrog. pron.* which? what thing?

mizin (s), to sail; tana gumi mizin inabi gul, they departed by ship  
 privately. Mark, vi. 32.

moa,

moaizinga, *n.* an ulcer; *a.* impure.

moamai (?), moamai kauralnga, *a.* deaf.

moamoa (s), *a.* eminent (man).

moamu (s), *n.* art. Cf. muamua.

möbalmöbal (?), möbalmöbal palan, *v.* to pluck. Mark, ii. 23.

modobaig. Mark, xii. 21.

modabia, modobia (s), *v.* to answer, to pay; to punish; to pay the  
 blood price or were geld.

modobigal (? the fellow answering); uka modobigal, three. Cf.  
 numerals in Grammar.

moeai, *v.* to enlarge.

modobigipa, *v.* to be unrewarded; modobigipa launga nubepa, he shall  
 not lose his reward. Mark, ix. 41.

mögi-bötainga, *ad.* in the morning, long before day. Cf. mügi  
 bateing (м).

möi (B), fire, = mui; moi i asimïs (м), moi i usimi (мb), a stamping  
 dance (362).

möidai, möidan, *v.* to build; lagau möidai mabaeg, builder. Cf.  
 mideipa.

moidemin, *v.* to prepare.

möiga (?), ngalpa möiga kaziöl, is on our part. Mark, ix. 40.

moigi (s), *n.* dawn. Cf. arö.

moi-id (т), *n.* an eruption of pimples.

moilmoil, *ad.* sadly; *a.* grieved.

moin, *pl. suffix* to verbs.

moi-nitun, *v.* to float.

möken (s), *n.* want.

mokenmepa, *v.* to wish, to want.

mölpalö (B) = mulpal.

mönamöin, *a.* joined together, united; kalmel mönamöin, *v.* to unite (Macfarlane). Cf. manamoizinga.

mōōsa (B), *v.* to expectorate. Cf. mos.

moosö (B), *n.* the lungs.

mopa (?), mani mopa körupa, made head of the corner. Mark, xii. 10.

morap (T), mörap (S), *n.* bamboo; sukub-morap (N), sukubu-morap (T), *n.* a native bamboo tobacco pipe.

morbaigoräblnī (M), *n.* the name of a fish (Legends, II. 180) (? the jumping-fish, *Periophthalmus*).

möri = mari, *pl.* möril.

mörilaig, *a.* possessed; watri mörlog, possessed with an evil spirit. Mark, vi. 7. [mörlogia].

mörimal, *n.* & *v.* lean.

mörlogia. See mörilaig.

moro (M) = muru.

möroigö, *a.* old, aged, of persons only; *pl.* moroigal. Cf. kulba. [moroigau, moroigöu, moroigan.]

mortu (T), a house.

mos (B), *n.* spittle.

mos-aladiz, *v.* to spit.

mosan (?), mosan bauka, mosöbauka weidaman, *v.* to foam. Mark, ix. 18, 20.

mösial (?), noi mösial piöbizi, he marvelled. Mark, vi. 6.

mowiga (S), *n.* an elder. Cf. möroigö.

muamu, *n.* knowledge, wisdom.

muamuagigal, *a.* without understanding.

muamuai = moamoai.

muasin (S), *ad.* after; *v.* to finish; *conj.* then, when.

mubia (?), Mark, iv. 15.

muchī (Mg), *n.* hair. Cf. Mir. mus.

mudamudö, *a.* crowded (?). Mark, ix. 14.

mudö (S), *n.* a house, dwelling place; village (B).

mudö (S), *n.* a multitude.

mu,

mue (M), *n.* firewood, fire; mue-kemeipa (M), *v.* to kindle a fire.

mudu (M), *n.* a camp. Cf. mudö.

mudul (M), mudula (B), *n.* the neck.

mue-daje (M), *n.* a small petticoat, worn by women.

- mugara** (r), *n.* a large fish called "barracoota" by the settlers.
- mügi** = *magina*; **mügi kazi**, **mügi kaje** (m), a child; **mügi kalakala**, chicken. **mügi bateing** (m), morning.
- muging** (m), *a.* small, few, a portion of. Cf. *Mir. mog.*
- mugu**, *n.* termites; the mound of termites (m).
- mugu** (B), *n.* a remnant. Cf. *Mir. mog.*
- mui** (m), *n.* the inside; **muia utizö**, **muia utem**, *v.* to enter (s); **mui teipa** (m), *v.* to put inside, to hide, conceal; **muinu**, *prop.* inside, within; **mui-ariz**, *n.* a redoubt, refuge (*Macfarlane*).
- mui**, *n.* fire, a fire brand. [**muiapa**, **muilai**.] Cf. *mue.*
- muia-utiz**, *v.* to enter in, to go in. [**muia-utemin**.]
- mui-ilinga** (s), *a.* square (possessing an inside).
- muile** (m), *a.* hollow.
- muingu** (?), **muingu trapot**, *n.* the pelvic fin.
- mui-teipa** (m), *v.* to put inside; **mui taean**, to charge. *Mark, ix. 25.*
- mui-wazo** (mb), *n.* the smaller under leaf petticoat.
- muki** (mg), *n.* water. Cf. *nguki*.
- mukmepa**, *a.* and *v.* loose.
- mukö** (s), *n.* rock, stones. Cf. *kula*.
- muku-boidan** (B), *v.* to fasten; to tie a thing. Cf. *dorodimoin*.
- mula**,
- mulai** (s), *v.* to speak. [**mulailai**. *Mark, viii. 30.*]
- mulaigi** (s), *v.* not to speak; *n.* nothing (i.e. no words).
- mulagia** = **mulaigi**.
- mulainginga**, *a.* not to speak.
- mulaigö** (B), *v.* = *ngulaig*, to know.
- mulaizi** (?), **nongo mulaizi ia**, his oath (? word). *Mark, vi. 26.*
- mulaka** (s), *ad.* down.
- mulepa** (m), *v.* to speak, tell. [**muliz**, **mulemipa**, **mulai**, **mulan**, **iamuliz**, **mulailai**.]
- mulu** (B), *v.* to answer, reply.
- mulizö**, *v.* to speak, to talk.
- mulngu**, *suffix* to plur. pron. from.
- mulpa**, *suffix* to plur. pron. to, for.
- mülpal** (m), *n.* the full moon.
- mulpange**, *suffix* to plur. pron.
- mulsipa** (377).

- mulupa (s), *ad.* down ; *v.* to descend.  
 mumugu-sigaman (?), see wakai mumugu-sigaman.  
 mun (s), a suffix to plur. pronouns forming the possessive case.  
 munia, suffix to plur. pron.  
 munia (s), *suffix* to plur. pron. with, have.  
 mura (s), *a.* all, entire, whole ; mura-urui, *n.* insect.  
 murar, (mg), *n.* a clay tobacco-pipe.  
 mura-wardan (B), *n.* warrior.  
 murda-gamulnga (B), *a.* yellow.  
 murda umaizi (T), *n.* a plaited string.  
 mŭri, see Legends, p. 180.  
 murimari (T), poor, lean.  
 muro (M) = mura, all.  
 muru (M), *n.* the cabbage palm. *Corypha.* See moro.  
 mŭrŭg (M), *n.* sweat. Cf. magö.  
 musi (B), *n.* a piece.  
 musinginga (?), tanamun korökak musi ginga, have no root in themselves. Mark, iv. 17.  
 musŭ-teipa (M), *v.* to scratch, pinch.  
 musu (M), *n.* a green ant.  
 musur, musurö, *n.* armlets ; plaited bracelets.  
 mutalö (B), *n.* a young coconut with water and no kernel.  
 muti, *n.* an ear-ring ; the pendulous portion of the ear.  
 mutu (?), mutu trapot, the pelvic fin. Cf. muingu.  
 muzu, *n.* termites. Cf. musu, mugu.  
 muzura (s) = musur.

Na, *pron.* she.

na, *n.* a song, hymn.

nabepa, *pron.* to her, for her.

nabi, *ad.* now, at present, this ; nabi göiga, to-day.

nabi-gět, ina nabigět (M), *a.* five ; nabiget-nabiget, ten.

nabikoku (M), fifteen ; nabikoku-nabikoku, twenty.

nabing (M), *a.* this, these.

nad = neēt.

nadalai, *n.* the hair of the groin.

nadamai (B), *v.* to chew.

nadan (?), ngai ngita mulpa bami nadan kurusipa midö? how long shall I suffer you? Mark, ix. 19.

nadö, *pron.* she.

nadu (s), *pron.* her.

nadu (m), *n.* a grass tail.

nadual (mb) = nadur.

nadulza (r), *n.* the hair on the pubes. Cf. nadalai.

nadur (m), *n.* a tail ornament worn in a dance, = nadual.

naga (m), *n.* a belt worn obliquely across the chest. Cf. kamadi.

naga (s), *ad.* where?

nagai,

nagaläg, *n.* a hawk, the sea-eagle.

nagalug, *n.* a hawk, = ngagalaig.

nagapa (s), nagepa; *v.* to look. [nagemipa.]

nagemiu, *exclam.* behold! look! See nagiz.

nagemilu,

nagepa, *v.* to look. [nagiz, nagemipa, nagemiu.]

nager (m), = naga.

nagiz, nagizi, nagizö, *v.* to look, to stare.

nagö *ad.* where?

naïi, *n.* the tongue, = noia.

naidai, naidai-dogam (s), *n.* the north.

naigai (b), *n.* the north.

nainanope, nainonob, nainonop (together?), thörte nainonop, thirty fold. Mark, iv. 8, tana nainanope uzar nubepa siëiki, they came to him from every quarter. Mark, i. 45.

naipuisö (b), *v.* to lick.

najeronajero (r), *n.* the dodder (a pink climbing parasitic plant).

nakareipa (m), *ad.* above, upwards.

nalaga, *ad.* where? which?; köiza nalaga senabi sabi? which is the great commandment in the law? Mark, xii. 28.

nalagazi, *ad.* whence?

nalagi (s), *pron.* which?

namoit, *ad.* when? (Macfarlane.)

nana,

nanimiz, see garo-nanamiz; tana nanamoin, they consulted.

nanga, a *suffix*.

ngangap, *n.* the north; pin nangapa, *n.* the south (Macfarlane).



nanitna (s), *v.* to run, ran ; *a.* erect.

nanu, *pron.* her, hers.

nanue (m) = nanu.

nanuz, *pron.* from her.

nanuza, *pron.* her thing, hers.

napa, (mg), *v.* to bring, = ngapa.

na-poidan (s), *v.* to sing ; to laugh.

nar, (mg), *n.* foot, = ngar.

narang (m), *n.* the armpit ; nang sūka (m), the hair of the armpit.

narangi,

narberit,

narminamis, *n.* a moth.

nataizinga, *n.* a thing that is burnt ; senabi mura gudataean natizinga,  
all whole burnt offerings. Mark, xii. 33.

natam (m, mb), *n.* a namesake ; *v.* to change names with another.

natiz, natizö (?), white. Mark, ix. 3 ; ngita ugulaig amadan dökal  
natizö, ye know that summer is nigh. Mark, xiii. 28.

nau (s), *n.* hymn. Cf. na.

naur (m) *n.* the peg of the kobai or throwing stick (334). Cf. ngurr.

ne (s), *pron.* his.

neēt, a dugong platform (351). Cf. nad.

negal (?), ina mura demoni negal iapa, suffered not the devils to  
speak. Mark, i. 34.

neipoiz, *v.* to lick.

nel, nelö, *n.* name. [nelpa.]

nele = nel ; Iesun nele adaputiz, Jesu's name was spread abroad.  
Mark, vi. 14.

nelea (?) = nel. Mark, vii. 2.

nelenga = nele, nga.

nelginga (s), *a.* fameless (lit. not having a name).

nep (m), *n.* a grand-child.

nerawkai (m), *n.* an unmarried woman.

netur-kaje (m), *n.* a son.

nia, *suffix*, with, at ; midö ngalpan-nia launga senabi nongo babat  
are not his sisters here with us? Mark, vi. 3.

niai, *v.* to sit ; niai-kazi (s), an attendant, servant ; contract boy (s).

niai za, *n.* chair ; niai lagö, *n.* a seat ; niaipa ielpanö, *v.* to  
marry.

niainginga, *a.* not sitting.

niain = niai.

nianö = niai. Mark, vi. 39.

nida (?), noi kaikuöimo nida idin senabi durai kikiri, he began to lay his hands upon a few sick folk. Mark, vi. 5.

nidai, (?) root of nidaipa.

nidainginga, *v.* not to do.

nidaipa (s), *v.* to do.

nidaizinga, *n.* things done.

nidapa, *v.* to touch.

nide,

nidemin, *v.* to touch.

nidiz, nidizi, nidizö (s), *v.* to do, to make, act; done; *n.* mode (Macfarlane).

nidö,

nigita = ngita.

niki, *n.* a fern.

niki (?); köi tamö lakö niki adan, shoots out great branches. Mark, iv. 32.

nīkīlagul (mb), *n.* a marine insect (*Halobates*).

ningaibia (? = ngibia), ningaibia gnulai ga (s), *v.* to translate.

nipa (m), *suffix*, for.

nisalnga, *a.* having leaves.

nis, nīsö (s, m), *n.* a leaf.

nis-thung (m), *a.* leaf like, green.

nitamau (?), noi iautumiz mura mabaegal apa nitamau, he commanded the people to sit down on the ground. Mark, viii. 6.

nitun, nitunö, *v.* to put out, push out; kaba nitunö *v.* to row. Cf. getö-nitun.

nizö (?), a misprint for nidizö. Mark, v. 38.

nö, *suffix* to nouns.

nöbaba (s), *n.* skin.

nögaipa, *v.* to look. Cf. nagiz. [nögain.]

noi, *n.* a light framework erected over the fire on which to dry and smoke fish (311).

nöi, *pron.* he.

nöi, nöia, (s), *n.* tongue.

noidail, nöidail, *a.* beloved.

noidal = noidail.

noidizö, *v.* to honour. Mark, vii. 10.

nöidö, *pron.* he.

noidöka (?), noidö, *ka.*

nöino, noinö, *pron.* him.

noitai, (s), *n.* tongue.

none (s), *pron.* his.

nongo (s), *pron.* his.

nongongo (?). Mark, viii. 30.

nonobo,

noriza (B) (?); urö noriza (B), *n.* ebb tide.

nu, *suffix* denoting the locative case, in, at, on.

nu (s), *pron.* he, him, it.

nu' abepa (M), *pron.* for himself, = nubepa.

nubepa, *pron.* to or for him.

nubepe = nubepa.

nubia (s), *pron.* him.

nudan, *v.* to rub.

nudi (M), *n.* tears.

nudu (M), *pron.* he.

nuö (M), *pron.* he.

nukangaba guba (B), *n.* the north-west wind.

nukenmepa (?) = mokenmepa.

nuk' énei (M), *a.* thirsty.

nuki (M), *n.* fresh water; dana nuki (M), a well (lit. water eye).

Cf. Polynesian mata-vai, which also = water eye.

nukíneipa (M), *v.* to thirst.

nukunoko,

nukunukö (?), nukunukö iamulizö, to reason, to think about. Mark,

ii. 6, 8; mipa ngita nukunukö pöibiz ? why make ye this ado ?

Mark, v. 39.

numainginga. See ngona-numainginga.

numani. See ngona numani.

nungu, *pron.* his, = nongo (Macfarlane).

nungu (s), *prep.* from; nungu korkak, from the heart. See nu, ngu.

nungungu, *prep.* from, from it; nungungu umanga, from the dead.

nunu (M), *pron.* his.

nupadö (?), nupadö-taeon, *v.* to roll.

nur, nurö, *n.* a noise, a roar, a voice.

nurage (м), *a.* quiet.

nurai, *n.* a sound, = nur.

nureipa (м), *v.* to wrap round, to coil, to twist. [nuran.]

nuremizingi (?), wur nuremizingi (м), *n.* low water.

nurezingi, wur nurezingi (м), *n.* ebb tide.

nurile (м), *a.* noisy.

nurinuri (мг), *n.* a sweet potato.

nuriz,

nurö, *n.* a crack, an echo = nur.

nursak, *n.* the nostrils. Cf. sakai, nurse.

nurse (м), *n.* the white of an egg; the mucus of the nose.

nutan, *v.* to try, to tempt, to taste.

Nga, *pron.* who? what? (person).

ngabadö, *n.* a room; noidö sesitaman ngipelpa wara köi ngabad gimal,  
he (will) show you a large upper room. Mark, xiv. 15.

ngadagidö, ngadogido, *a.* equal, lawful.

ngadal, *n.* number, size; iangu ngadal mura, all parables. Mark,  
iv. 13.

ngadalenga, ngadalönga, *n.* a picture, image; iangu-ngadalnga (s), *n.* a  
parable. [ngadalngange.]

ngadalenga, *a.* numerous.

ngadalngange. Mark, i. 44.

ngadapalepa, *v.* to be proud, to boast.

ngadazia (s), *a.* legal.

ngado,

ngadu, *pron.* who?

ngaeapa, ngaiapa, *pron.* to me, for me.

ngagalaig, *n.* a hawk. Cf. nagalug.

ngai, *pron.* I.

ngai-aikeka, *pron.* for myself.

ngaibia, *pron.* with me; me, after *v.* to follow.

ngai-kusaig, *pron.* myself.

ngaingai, *n.* a boar's tusk used for polishing a wap.

ngainge. Mark, x. 29.

ngalabe, *pron.* we two (exclusive).

ngalakai = ngölkai.

ngalapipa, *v.* to lie; *n.* falsehood.

ngalbe, *pron.* we two (exclusive).

ngalbelpa, *pron.* to us two, for us two.

ngalkan,

ngalnga (s), *a.* kind.

ngalngal, *n.* a liana or climbing plant; one of the figures in womer (361).

ngalpa, *pron.* we (*pl.*) inclusive of person addressed.

ngalpaldui,

ngalpan, *pron.* our (*pl.*).

ngalpalpa, *pron.* to us.

ngana, *n.* the breath, = ngöna.

nganäkapo (m), *n.* the heart, = ngönakapö.

nganö, *pron.* who?

nganu (m), *pron.* whose?

ngapa (m), *prefix* indicating motion to speaker; to bring (s); to come from a distance (b).

ngapamani, ngapamarö (b), *v.* to bring.

ngapanagemiu, see ngapa, nagepa.

ngapanagi, *exclam.* behold! lo!

ngar, ngarö (m), *n.* the leg; foot (s); ngara-pusik, a dance (362); ngara-taiermin, *n.* a dance (362); ngarauplla, the fibulæ.

ngaraki, *n.* a young woman.

ngarba (b), *n.* the collar-bone (ngarba-rid (mb.)).

ngaru (m), the monitor lizard.

ngaru (s), *ad.* ever, eternal, always, never (Macfarlane); ngaru poidaipa, *v.* to trouble, *i.e.* to always be asking. Mark, v. 35.

ngatö, ngatu (m), *pron.* I.

ngaubatö (b), *n.* a woman's brother. Cf. babatö.

ngau, *pron.* mine, my.

ngauakazi = ngawakazi.

ngaukalö = ngau, kalö, after me. Mark, i. 7.

ngaumun, *pron.* my, mine.

ngaungu, *pron.* from me, through me.

ngaunguzo,

ngauwoni,

ngawa,

ngawakazi, ngawaközi, *n.* daughter. [ngawakaziu, ngawakaziutu lag, ngawakiëe.]

- ngazo (s), *pron.* I.  
 ngi, *pron.* thou, you (*sing.*).  
 ngibepa, *pron.* to thee, for thee.  
 ngibia, *pron.* with thee.  
 ngidö, *pron.* thou, you (*sing.*).  
 ngidu, *pron.* thou.  
 ngika. Mark, v. 19.  
 ngi-kusaig, *pron.* thyself, yourself.  
 ngimipamapa (B), *n.* purpose (apparently a phrase, ngi mipa meipa ?  
 you do it why ?).  
 nginanga (?), nginanga sike ubinemepa, if thou wilt. Mark, i. 40 ; a  
 mabaeg sibuwanan a ngibia amadan apatanori keda nginanga  
 midö, and love thy neighbour as thyself. Mark, xii. 33.  
 ngingalkailaiga (B), *n.* idiot (*lit.* you liar).  
 ngino, *pron.* thee.  
 nginu, *pron.* thy, thine.  
 nginungu, *pron.* from thee.  
 ngipeine (M), *pron.* of you two, yours.  
 ngipel, *pron.* you two.  
 ngipelpa, *pron.* to you two, for you two.  
 ngipen, *pron.* your, of you two.  
 ngita, *pron.* you (*pl.*).  
 ngitaka, ngitaka mata körawaig, perceive ye not yet. Mark, viii. 17.  
 ngitamulngu, *pron.* concerning you (*pl.*) ; among you.  
 ngitamulpa, *pron.* to you.  
 ngitamun, *pron.* your, yours (*pl.*).  
 ngitamunia, *pron.* with you, among you. Mark, x. 43.  
 ngitana (M), *pron.* you (*pl.*).  
 ngitanämun (M), *pron.* your (*pl.*).  
 ngitangita, *pron.* yourselves.  
 ngödalenga = ngadalenga.  
 ngöde, *a.* like ; ngöde puinge, like trees. Mark, viii. 24.  
 ngödo (s), *a.* like to.  
 ngoi, ngöi, *pron.* we (*pl.*) exclusive of the person or persons spoken to.  
 ngoimulpa, *pron.* to us, for us.  
 ngoimun, *pron.* our (*pl.*).  
 ngöingöi, *pron.* ourselves.  
 ngölkai (s), *a.* false, *n.* falsehood ; liar (B).

ngomai,

ngöna, ngona, *pron.* me.

ngöna, *n.* breath; ngona-pudiz, *v.* to rest, to stay (*s*); ngöna-numa, *v.* to remember; ngona-poidan, *v.* to sigh; ngona-tuidan (?), *n.* palm (Macfarlane).

ngönakapö, *n.* heart, mind, lit. the seed "kapö" of the breath "ngöna." The Miriam word has a similar derivation from "ner," breath and "kep," seed.

ngonamani,

ngönanuma, *v.* to remember; ngönanumainginga, *v.* to forget.

ngöna-pudiz, *v.* to rest.

ngönu (*s*), *pron.* whose?

ngorngomai, ngorongomai (?), dana ngorongomai lagö, *n.* the temple.

Mark, xi. 11, 15, 27.

ngorotaran (?). Mark, x. 15.

ngou-pamani, *a.* meek.

ngözo, *pron.* I (apparently only used by a female speaking). Cf. ngazo.

ngu, *suffix* from, concerning, through.

ngudi, *n.* a tear.

ngugiai, *n.* a cup of water. Mark, ix. 41.

nguki (*s*), *n.* fresh water; nguki-tuidan, *v.* to urinate. [ngukingu.]

ngukiai, *n.* a cup of water.

ngukulnga,

ngul (*m*), ngulö (*s*), yesterday.

ngulai, *a.* possible; ngulai za köigörsar, many things are possible.

Mark, ix. 23.

ngulaig (*s*), ngulaigö, *v.* to be able, can, to know how, to understand; *n.* ability. [ngulaignu.]

ngulaigasin,

ngulaigöpa, *v.* to know.

ngulaik = ngulaig.

ngulaizi, *a.* chosen.

ngulaizinga (*s*), *a.* and *n.* chosen.

ngulamai, *a.* obscene; ngulamai za, *n.* an abomination. Mark, xiii. 14.

ngulamoin, *v.* to hate, abhor; to be disgusted with; to sneer.

ngu-mabaeg = nga mabaeg.

ngurapai, *n.* teaching, doctrine; ngurpai-mabaeg, *n.* teacher.

ngurapipa, *v.* to teach; to learn, to know, to recognize.

ngurngomizö (?), danö ngurngomizö, *n.* religion. See ngorngomai.  
 ngurö (s), *n.* voice. Cf. nur, nurö.  
 ngurö (p), *n.* the beak of a bird.  
 nguro-taeān, *v.* to keep out, to crowd out; *n.* a wall (s); ngurö-taeāmoin,  
 they were choked, crowded out. Mark, xiv. 7.  
 nguro-weidaizinga, *n.* a casting out.  
 ngurö-weidai, *v.* to cast out, to expel, dismiss. [nguro-weidizi.]  
 ngurpai = ngurapai.  
 ngurpan. See ngurapipa.  
 ngurr (m), *n.* the hook or peg of the throwing stick (kobai). Cf.  
 naur, ngurö (334).  
 ngursaka (m) = nursak. Cf. nur, saka.  
 ngursilamiz, *v.* to wink.  
 nguru-oidan, *v.* to dismiss = nguro-weid.  
 ngurupaipa = ngurapipa. [ngurupan.]  
 ngurupai = ngurapai.  
 ngurupaizinga, *n.* things taught, doctrine.

Oëbada (m), *n.* soft turtle eggs.  
 oka (m), *n.* a grub found in dead wood.  
 okösa (moa, mb, n, r) = ukasar; okösa ööröpun, three.  
 onailai (?), noi ubigösia kunia onailai, he would not reject her. Mark,  
 vi. 26.  
 ooja (r), *n.* a small cowry. Cf. uza.  
 orapuni = urapon.  
 oripara (m), *n.* the rainbow.  
 oropun, orapuni (moa, mb, n, r) = urapon; okösa ööröpun, three; okosa  
 getal, two hands, ten.  
 ösilai (? from asin); noi gudöwadan tanamulpa kaimi ösilai, he  
 allowed no man to follow him. Mark, v. 37.  
 oudazi (?) tanamulpa oudazi poidan, healed them. Mark, vi. 13.  
 Cf. udas.

Pa, *prefix* to verbs indicating motion; pa-uzari, go away; pa-ieudiz,  
 pour out; pa-lagiz (pa-ilagiz), fly up; pa-pagan, to extend  
 round, &c.

pa, *suffix* to nouns, to, for.



pa (s, ɓ), *n.* a fence, either for garden or as a protection in fighting.  
Cf. āra.

pad (mb), *n.* the tympanum of the native drum.

pad, *n.* a bird's nest. Cf. fad.

pada, padö (m, s), *n.* a wooded hill, a mountain. [padau, padapa, padria.]

pädä-kwik, *n.* the skull or head. Cf. pada, kwik.

padamö (m), *n.* a nest.

padap (s) = pada.

pädätrong (mb), *n.* a bamboo rattle (375).

padö. See pada.

padotu. See Legends, p. 180.

padra (s) = pad, *n.* the skin used for the tympanum of the native drum.

pa-dröuradiz = pa-töridiz; ukauka tana padröuradiz, four carried.  
Mark, ii. 3.

paekau, *n.* a butterfly. Cf. paikau.

paga (s), *v.* to throw.

pagaeen, *v.* to stretch out, to extend. [pagaeen.]

pagamoin (s), *v.* to sew, to mend; api pagamoin, *v.* to mend fish traps.

pagamoin, pagömöin (?); kanguru pagamoin, *ad.* round about.

pagamoman (?), *v.* pagamoman sepal azazi san, be (ye) shod with sandals. Mark, vii. 9.

pagan (s), *v.* to throw, to descend, to sting, to pierce.

pagara, *n.* a sponge. Mark, xv. 36. Cf. pazara, diadi.

pagaru (ɓ), *n.* coral. Cf. pagara. (In Jukes' Muralug (Pt. Lihou)  
Vocab. this word = seaweed.)

paget (?), paget-wanizo, *v.* to slip.

pagiz, pagizo (?), mazar pagizo. Mark, v. 15.

pai,

paibanö (ɓ), *v.* = poibanö.

paielega, paielegamoin (s), *v.* to tear.

pa-ieudiz, *v.* to pour, to add (a liquid?). [paieudan.]

paigamozinga (s), *n.* a split.

paikäu (ɓ), *n.* a butterfly, = paekau.

paiwanö (?), *v.* paiwanö-pagan, *v.* to display.

paka, *n.* a maiden.

**pakadö**, *n.* a bird's nest, a cage (*β*). Cf. *pad*, *fad*.

**pakai** (*τ*), *n.* the name given to the tail of a mask from Nagir.

**pakazal** (*?*), *köi kutal töitu pögai pakazal ngalkan*, for a pretence make long prayers. Mark, xii. 40.

**pakölgal** (*?*), *kedazingu kai mura kikirí laig nubepa pakölgal iman*, nubepa garötaean, insomuch that they pressed upon him for to touch him as many as had plagues. Mark, iii. 10.

**pakomari** (*η*), *n.* a wig. Cf. *adizela*, *adüdziolai*.

**pala**, *pron.* they two.

**paladö** (*?*), *ia paladö*, *n.* the lungs.

**palae**, *pron.* they two, both.

**palagis** (*β*), *n.* the east, *i.e.* the rising (of the sun). Cf. *palagiz*.

**palagiz**, *palgizö*, *v.* to rise, spring up, fly; *göiga palgizo*, *n.* sunrise; *urui palgizö*, *n.* bird; *kadrö palagiz*, *v.* to fly down on.

**palagusö**, *n.* an oven, hence a cooking pot or saucepan.

**palaipa**, *v.* to split, to divide, to open, to pluck (corn), Mark, x. 51; to open (the eyes or ears), *danö-palaipa*, *kaura paleman*; *kerkatö-palan*, *v.* to torment. Mark, v. 7. [*palan*, *paleman*, *palamöin*.]

**palaipa** (*s*), *a.* sick.

**paláman** (*μ, s*), *pron.* of them two, theirs.

**palamiz** (*?*), *guda-palamiz*, *v.* to overflow.

**palamulngu**, *pron.* from them two.

**palamulpa**, *pron.* to or for them two.

**palamun**, *pron.* of them two, theirs.

**palan** (*?*), *kukö-palan*, to save. Mark, viii. 35.

**pale** (*μ*), *pron.* they two.

**palealnga**, *a.* dry.

**paleipa** (*μ*), *v.* to crush, to pound with stones.

**palelapudi** (*s*), *a.* dry.

**paleman**, *dual* of *palaipa*, to open.

**palenipa** (*μ*), *pron.* for themselves (*dual*).

**palepa** (*?*), *ngada-palepa*, *v.* to boast, to be proud.

**palgan** (*?* from *palagiz*), *iadu-palgan*, *v.* to tell, relate, declare.

**palgapalan** (*s*), *v.* to smash.

**palge** (*μ*), *ad.* completely, into pieces.

**palgin** (*s*), *v.* to fly, to spring up, = *palagiz*.

**palginö** (*β*), *v.* to flog.

- palisa (м), *n.* the down of a bird. Cf. plis.  
 paliz. See palaipa; dan paliz, opened the eyes. Mark, x. 52.  
 palngin, palengin, *v.* to scourge, to flog.  
 palpägipa (м), to finish (said of women's work).  
 pam (s), *v.* to mean.  
 paman (s), *v.* to dig.  
 pamizin, *n.* rape.  
 pamizö (?), madu-pamizö, *v.* to be affrighted. Mark, i. 27. [madu-paman, madu-pamemin.]  
 pananamanö (в), *v.* to kick.  
 pange,  
 panin (s), *n.* adze.  
 panudiz, *v.* to press.  
 papagan, *v.* to enclose; vineu apö söwagai a papagan, planted a garden and set a hedge about. Mark, xii. 1.  
 papalamizö (s), *v.* to burst, to open, to break.  
 papataina (?), apö papataina (в), *v.* to plant a garden.  
 papölamöipa, *v.* to burst, to open, to break. [papalamöin.]  
 papoliz (s), *v.* to bruise.  
 papudamiz, *v.* to cease; gubö papudamiz, the wind ceased. Mark, vi. 51. Cf. pudeipa.  
 paradamu (mb), *n.* a species of *Cymodocea*.  
 parama (r), *n.* red ochre, paint made from red ochre.  
 paran (?), paran matapa, parana matampa (в), *v.* to snore.  
 paran, (s), *v.* to cut, = palaipa.  
 paranudan (mb), *v.* to rub noses and embrace heads.  
 parapar, *n.* power; *pl.* pörapöral.  
 pardan, *v.* to draw.  
 parma, *n.* red ochre (м); red (н); clay.  
 paromatam, *n.* a female pig. Cf. burum.  
 parpar, *n.* power; *pl.* pörapöral.  
 paru (м), *n.* the forehead, the face, the front; *prep.* by (s); parunu, *prep.* in front, before.  
 paru-iman, *v.* to salute. [paru imamöin.]  
 paruidan (s), *n.* guile, deceit. Mark, vii. 22.  
 paruidizö, *v.* to deceive.  
 paruma (mb), *a.* red. Cf. parama.  
 pasa (s, в), *n.* a doorway, gate, the opening. Cf. tamudara. [pasanu.]

pasagud (s), *n.* a door. Cf. pasa, gud.

pāsei (m), *n.* a tree, the light wood of which is used for making sarima and kāraba.

pasia, *n.* a pass, = pasa.

pasikaig (s), *n.* a post.

pasim,

pat (BADU), *n.* a short spear.

patacan (? throw out). Mark, vii. 21.

pataipa (? to put or jut out), danal-pataipa, danal-pateipa (s), *v.* to watch. [danal-patamoiziu.]

patalai (? prickly, sticking out), pui-patalai, *n.* thorns.

patamoin, *v. pl.* from patan.

patan (s), *v.* to cut; kuikō patan, to behead, Mark, vi. 16; gudō patan, to gnash the teeth; butupatan, *v.* to heal. [patamoin, patamoiziu.]

patapi (s), *a.* finished.

pataraidizo (s), *v.* to dispute.

patauradisō (B), *v.* to carry on the shoulder.

pate = padō.

pateipa (m), patepa, *v.* to come here.

pati (s), *n.* a bell. A Lifu word.

patidan (s), *v.* to break (perhaps to fall down, and hence break something).

patidiz, *v.* to bow; to fall down.

patigingā, from pataipa; danal-patigingā, not looking after, not watching.

patiliz (s), *a.* revered.

patiz, patizō (s), *v.* to sit in; gulai-patiz, *v.* to get into a ship, Mark, vi. 45, to be in a ship, Mark, i. 19.

patō, *n.* a fork.

patōridai, *v.* to question with, to dispute. [patōridizō, patōridaizingā.]

patralai = patalai.

patrauradiz, *v.* to bear, to carry. Cf. tōridiz.

patrediz, *v.* to deny. Cf. gudo-tadiz.

patridiz = patidiz.

patritrizo = patridiz, patidiz.

paudō (B), peace.

paudalag, *n.* peace.

pauimizo,

pauna (s), *n.* leather.

paunap, paunapa (?), noi paunap a umizin, let him die the death.

Mark, vii. 10 ; nginu ngarö paunapa patan, thy feet cut off.

paupa (?) paupa kutrapa, now the time is far passed ; paupa kudapa, when the even was come ; Lifu, heji hë, e hej, it is evening.

Mark, vi. 35, 47.

paupusa (τ), an ornament of the kadīg (371). Cf. kadig-tang.

pautö, *n.* peace, = paudö.

pautö (β), *n.* the forehead.

pauzari, *v.* to go away ; pa, uzar.

pawa, *n.* a habit, a deed, a thing done ; manner ; *pl.* pawal. [pawau, pawangu.]

pawadan, *v.* to rebuke.

pawaginga, *n.* nothing (done). Cf. iaginga, zaginga.

pawaliz, *v.* to land ; to draw to shore. Mark, vi. 53.

pawalman (s), *v.* to arouse, to wake up.

pawizo,

paza (N), *n.* a flat fish (poisonous).

pazara (s), *n.* sponge. Cf. pagara, diadi.

pazilamiz, *v.* to attack (move against).

pear ku, *n.* a kind of fish.

pël, *n.* the tail of a fish ; the breast of a fish (M).

pëneipa (M), *v.* to dive.

pënö, *v.* to dive (Macfarlane).

penunamez, *v.* to dive, = pënö (Macfarlane).

pëpedu, *n.* a bamboo flick or whip, same as the Miriam "lolo."

pepe, pepenga, *a.* thin ; pepe baradarangu, because it had no depth of earth. Mark, iv. 5.

perta (mb), *n.* the wrist, the forearm ; six, in counting on the body. Cf. Grammar.

pia, *n.* the bark of a tree.

pibeipa (M), *v.* to give, = poibaipa.

pichi (mg), = piti.

pid (τ), *n.* a black bee.

pideipa (M), *v.* to dig.

piepa (?) sagul piepa (M), *v.* to sing.

pigin taean, *v.* to dream.

piki (м, в), *n.* a dream; piki-lalkeipa (м), *v.* to dream.

pikuri (т), = pikuru.

pikuru, *n.* a head dress of teeth; pattern on a drum, probably derived from the head dress.

pinapai, *n.* the east.

piner (т), *n.* the name of a tree, *Erythrina* (409). (Legends, 12).

pingapa (в), *prop.* at.

pingi (в), *n.* a fishing net (? basket).

pingulpa (?) pingulpa iabugudia, in the way. Mark, x. 52.

pinin (с), *v.* to anoint.

piniteipa (м), *v.* to shave.

piöbizi (?), noi piösial piöbizi, he marvelled. Mark, vi. 6.

pipai (с), *n.* paper. Perhaps English "paper."

pipai (?). Mark, iii. 8.

pira, *a.* soft; pira kuma (в), *n.* diarrhoea.

piranga (с), *a.* soft, = pirung.

piröan (м), *n.* a black snake.

pirung (м), *a.* soft, swampy, spongy, pliable, = piranga.

pis (м), *n.* a crack, an opening.

pisalinga (в), *n.* a leak.

pisamainö (в), *n.* rheumatism.

piti (т, м, в), the nose; piti terti (м), piti sek (м), the perforation in the septum narium (406).

pitu, *n.* a ring.

piwer (м), *n.* the mullet.

piwul (mb), *n.* a broom. Cf. kusu, kusulaig.

plagusi (в), *n.* a pot, = palagus; turik plagusi (в), *n.* an iron pot.

po,

plis (т), *n.* feathers. Cf. palisa.

pogai,

pögamiz. See pagan.

pöi (с), *n.* dust, powder.

poibaipa, *v.* to give. [poiiban.]

poibaigi, *v.* not to give.

poiibanai (? from poibaipa), ba poiibanai senabi mabaeg aideigan, for there shall be given to the man that has not. Mark, iv. 25.

poibi (с), *v.* to croak.

pöibizi (s), *v.* to crow ; mipa ngita nukunukö pöibiz, why make ye this ado? Mark, v. 39.

poidamoin (s), to spread.

poidan (?), oudazi-poidan, *v.* to heal. Mark, vi. 13 ; udas-poidan, to save, rescue (Macfarlane). Perhaps for udu-zi poidan, to hang from or on the arm, hence to protect, save.

poidaipa, poidan (s), to choose, to pull, to pluck ; kadaipa poidan, *v.* ordained. Mark, iii. 14 ; nga-poidanö (B), na-poidan, *v.* to sing a song.

poidanö (B), *v.* to hang.

poidiz (?), korkak mapu poidiz, *v.* to be displeased. Mark, x. 14.

poimanak (?), poimanak-palan, *v.* to murder.

poipetegam, *n.* the east.

poipiam, *v.* to watch. Cf. danal-pataipa.

pokani (?), pokani wapi (MB), *n.* the flying fish. Cf. puwi.

pokërai, *n.* a girl.

pokiridö (B), *n.* the kidney.

pokoko (M), pökuk, *n.* the heel.

pölai (? a cutting), minarö pölai, *n.* writing, *i.e.* cutting marks.

pongeipa (M), *v.* to sail.

pönipan, *n.* lightning ; *v.* to shine.

pönizinga (?), mabaeg pönizinga, *n.* a carpenter. Mark, vi. 3.

pordai-za, *n.* a hook.

potaipa, = pataipa.

pötaizimail (?), nongo buta potaizimail, he had healed many.

pötur (M), *n.* a digging stick.

prak, *n.* coral, *pl.* prakil.

prateipa (M), to eat.

pratralinge. See patalai, pui.

prue (M), *n.* a tree (the general term). Cf. pui.

prutika (MG, Stone), prutai (MG, D'Albertis), *n.* food.

puban (s), *n.* paddle.

pudaizinga, *n.* things that fall ; börupudaizinga, crumbs. Mark, vii. 28.

pudam (s), *v.* to pull, to pluck.

pudamoin (?), za-pudamoin, *v.* to sell.

pudan, *v.* to open.

pudanö (B), *v.* to dig taro. Cf. poidanö.

- pudeipa (м), *v.* to fall down; gaiga pūdicō (в), *n.* west.
- pudemīn (s), *v.* to make obeisance.
- pudisō. See pudeipa.
- pudiz, *v.* to undress.
- pudizi (s), *v.* to retain; balbai-pudiz, *v.* to peep; ngōna-pudiz, to rest.
- pudō (мб), *n.* the shaft of a javelin.
- pugan (?) ipidadō pugan, *v.* to reprobate, to blaspheme; *a.* profane; rimarim pugan, *v.* to find fault. Mark, vii. 2; watri pugan, *v.* to speak evil.
- pui, *n.* a tree; a log; wood; pui-patalai, pui-patralai, *n.* thorns [puinge, puia.]
- puian, *v.* to blow.
- puidan, *v.* to hang; ngōna puidan, *n.* a palm (Macfarlane).
- puidiz, *v.* (to hang?), paru mapu puidiz, to hang a weight in front. Mark, ix. 42.
- puidiz = poidiz, korkak mapu puidiz. Mark, iii. 5.
- puie (м), *n.* the fore fin of the turtle.
- puiman, *v.* to suck.
- puinge (?) trees.
- pukatō, *n.* a locust; a grasshopper (в).
- puki, *n.* a hump, the side of the abdomen.
- pukuk (м), *n.* the heel. Cf. pokoko.
- pulman (?), ganu-pulman, *n.* smell.
- pungaipa (s), giun-pungaipa, *v.* to be foolish; beraī-pungaipa, *v.* to be easy. Mark, x. 25; ikane pungaiapa, *v.* to be glad. Mark, xii. 38.
- pupariz (s), to flee. Cf. bupariz.
- pupui, *n.* a flute.
- pupumiz, *v.* to heal.
- pura (м), *n.* the eyelid.
- pūra (м), skin.
- purāpurā, *n.* the producing of disease or sickness by magic (purīpurī), a Daudai word rarely used in the islands. Cf. maid.
- purapar = parpar. Mark, vi. 5.
- puridan (?), guda-puridan, *v.* to be insolent.
- puridōralenga (?), gamu puradōralenga, whole, well in body. Mark, ii. 17.



- purka, *n.* the eyeball, the eye; purka kekermisina (s), *n.* ophthalmia -  
 purkāpa,  
 purke (m), *ad.* well, many.  
 purpi (m), *n.* the bee-eater. (*Merops ornata*.)  
 purtan = purutan.  
 purteipa (m), *v.* to eat.  
 puru (s), *v.* to steal, rob; *n.* theft.  
 puruka = purka; puruka parö madö gamuasin, an evil eye. Mark,  
 vii. 22. [purukana.]  
 purur (m, *n.* the bark of a tree.  
 purutaingina, *v.* not to eat.  
 purutan, *v.* to eat, ate; *pl.* purutamoin.  
 pusarisö (s), *v.* to pull a rope. Cf. puzarizö.  
 putage (m), *a.* many.  
 putiz, putizi, putizö (s), *v.* to fall; görga putizö, the sun goes down.  
 putra, putran (? = pudan), tana arakato putran lagou kalangu, they  
 made a hole from the back of the house. Mark, ii. 4.  
 puwi, *n.* the flying-fish. Cf. pokani-wapi.  
 puzarizo (s), to compel, to haul, to constrain.  
 puzida, *v.* to imitate.  
 puzik (?), ngara-puzik, *n.* a dance (362).  
 puzipa, *v.* to follow.  
 puzo (putso) (s), *n.* a white pigeon.

- Rabö (m), *n.* a mast; rab' waku, *n.* a mat used as a sail.  
 rada (m), *n.* a sharpened stick used for spearing fish (333), a  
 simple javelin.  
 raji (m), *a.* withered.  
 ramoginga, *a.* unshaded, without shade. Cf. rimö.  
 ranai (mg), *n.* a girl (D'Albertis).  
 rangadö (s), *n.* a mast.  
 rapepa, *a.* lame.  
 rapö, *n.* a claw.  
 ras (m), *n.* a driving cloud, scud.  
 ras, *n.* a lot.  
 rebata (m), *n.* aunt, father's sister. Cf. ama, apu.  
 rid, ridö, *n.* bone, skeleton; hence horn.

- rid (mg), *n.* the tongue (D'Albertis).  
 ridanga (s), *a.* hard, bony.  
 ridau, *n.* enemy; *v.* to oppose.  
 ridu (B) = ridau.  
 rimarim (s), *v.* to err, to mistake; *a.* mad, mistaken; *n.* a fool;  
     *pl.* rimarimal.  
 rimö, *n.* a shadow. Cf. ramoginga.  
 rogaig (T), *n.* name given by a lad to his sweetheart. Cf. azugerka,  
     rugeiga.  
 ruamon (s), *v.* to understand.  
 rud (M) = rada.  
 rugäbu (M), *n.* the sweet potato.  
 rugalö (B), *n.* baggage; gulngu rugal, *n.* cargo, baggage from a canoe.  
 rugeiga (M), *n.* a sweetheart.  
 rugu (?) kudru rugu, a small kind of dove.  
 rumbadi (M), *n.* a species of water lily.

- Sabi (Mb), *n.* tabu, prohibition; law (s); hence, sacred; *pl.* sabil; sabi  
     lagö, *n.* a church.  
 sabukemus, *n.* a needle.  
 sabukiri (s), *v.* to reproach.  
 sädeo (M), *n.* a cicatrix on the breast (sadawa, sadau).  
 sag, saga (s), sagö (B), *n.* a centipede.  
 sagad, *n.* a worm. Cf. kupar.  
 sagai (M), *n.* the horizontal fire stick (385). Cf. ini, guigui, salgai.  
 sagu (M), *n.* a kind of purple yam.  
 sagul, sagulö (M, B), *n.* a joke, play; sagul piepa, *v.* to sing.  
 sagul (s), *v.* to examine. (Perhaps introduced English "school").  
 sai, *n.* a bog; mud; shallow water on sea shore. Mark, iv. 1. [sainu.]  
 saima (B), *n.* the float of the outrigger of a canoe. Cf. sarima.  
 saka (M), *n.* a bone needle; a splinter (s).  
 saka (M), *n.* the lungs. See paladö.  
 sakai (M, B), *n.* a hole in a rock, a cave; sakai puru mabaegou lagonge,  
     a den of thieves. Mark, xi. 17.  
 sakangu, see sakö.  
 sakö (s), *n.* cloth. [sakangu.]  
 sakarö (B), *n.* a web.

sakar-taeam, *v.* to surname; noi palamulpa sakariä-taeam Boaneregi  
he surnamed them Boanerges. Mark, iii. 17.

sakar-töeam (?), amadan pasanu siëi sakar-töeam, near a door wher  
two ways met. Mark, xi. 4.

saladunga (b), *n.* a foreigner, a white man. Cf. saradönga.

salgai (m), *n.* sticks used for producing fire (collectively) (385). Cf  
ini, sagai, guigui.

sali (m), *a.* sick.

salö, *v.* to bale out

salop, *n.* the melon or bailer shell. Cf. alopa, alup.

salpaman, *v.* to lave. Cf. salö, paman.

salpumeipa (m), *v.* to bale.

sam = samu.

sam (m), *a.* cylindrical.

samera (m, r), *n.* a head dress made of cassowary feathers; *pl.* same-  
ral. Cf. dagoi.

samidö (s), *ad.* yes; really. Mark, xii. 26.

samu, *n.* the cassowary of New Guinea; samu widizi (s), *n.* crest or  
head dress made of cassowary feathers.

samuda, *n.* the eyebrows.

samudana (m), *n.* the eye lashes.

samudung (m), *n.* the eye lashes.

san (m), sana, the sole of the foot; the foot; sana-lumadö (b), *n.* the  
instep; azazi san, a sandal, shoe; nginu sananu worögi wazin,  
thy footstool. Mark, xii. 36 [sanangu, sananu.]

sana (mg), *n.* the cuscus.

sangopa, *exclam.* a greeting; good morning!

sapära (mg), *n.* hatchet (Jukes). Perhaps derived from Eng. chopper.

sapi (?), Mark, xii. 42.

sapor, sapur (m), sapura, *n.* a large fruit-eating bat or flying fox,  
*Pteropus.*

sapurökimus, *n.* a needle (lit. a hair from sapur), sapurokimuseu goag,  
a needle's eye. Mark, x. 25.

sara, *n.* a white gull.

sara, *n.* posts on which the platform for corpses were supported  
(402). Cf. kak.

saradönga, *a.* white. Cf. sara.

saragi (m), *n.* a small stick.

- sari (m), *n.* the netting of a canoe.
- sarima (m), *n.* the float of an outrigger; sarim' pati (m), *n.* the pegs of the sarima. Cf. saima.
- sarōka (?), noi wara sarōka iōbuia uzar, as he passed by. Mark, ii. 14.
- sarupa (m), *a.* drowned.
- sasanmepa, *v.* to decorate.
- sasiman (s), *v.* to rinse, to squeeze.
- sau, *n.* a rafter, a house post (B).
- sazi (B), *n.* a creeper used to poison fish.
- saziwaur, *n.* a year.
- seadadaget (moa), *n.* the ring finger (probably siau-dada-get, outside the middle finger).
- seautari, *v.* to stop.
- sebalbi, *pron.* these two.
- sei, *ad.* there = siei.
- seiwadadaig (B), next.
- sek (m), *n.* a hole (Jukes).
- sena, *a.* and *pron.* that; *ad.* there.
- senabi, *a.* and *pron.* that; senabi durai, *pl.* those; senabi is often used as equivalent to the Lifu ngōne, in the.
- senao, *pron.* that = sena.
- senaoki, *conj.* therefore.
- senau, *demons. a.* the, the same.
- senebi, senobi, = senabi. Mark, iii. 8.
- sepal, *pron.* both, they two. Cf. palae.
- sepalbi, *pron.* those two.
- sērāsērā (s), *a.* a white sea or shore bird; sērāsērā birgesera (415).
- sēsērē (mb), *n.* the name of a legendary hero who was changed into a bird (L. 23), probably same as serasera.
- sesitaman, sestaman (s), *v.* to show, guide. [sesitomaelai.]
- seta, *pron.* those.
- setaura (s), *n.* cross. From Greek *σταυρος*.
- setabi, *pron.* those.
- shi (m), *n.* a strip of the yellow epidermis of an orchid.
- si (m), *n.* the forehead. Cf. paru.
- sia (m), *n.* the toes; kaba-sia, the great toe.
- siaizi, *conj.* because.

siau (? = siei, sena), siau adal (s), *n.* outside.

siauki, *ad.* thither.

sib (B), sibū (M), *n.* the liver.

sibō-papalamiz, sibu papalamiz, *v.* to doubt.

sibu wanan (s), *v.* to have sympathy, to love, to pity.

siēe = siēi.

siēi, *pron.* that, *ad.* there; sienu, thereon; siēizi, siezi, therefrom, thence; durai siēi, those; siēiki, thither.

sier (M), *n.* the toes. Cf. sia.

sieri (?). Mark, iii. 8.

sigā, sigal (s), *n.* a distance; kōi sigal (s), *a.* far.

sigaman (?). Mark, v. 15, xii. 36. See wakai, mumugu.

sigataean (s), *v.* to convulse; gamu sigataean, to tear the body.

sigazi (s), *ad.* distance; koi sigazi, *a.* far.

sigo (? = sigal), ngi sigo gudalnga a launga senabi Augadan baselaia, thou art not far from God's Kingdom. Mark, xii. 34.

sik, sike, *conj.* if.

sikekai (? if will), midō midō sike kai nubepa karengemin inabi gubō a ina malu? What sort (of man) if will hear him, the wind and the sea. Mark, iv. 41.

sikiru (s), *n.* an arrow for shooting pigs. Cf. skūri, sūkori.

sikō (B), *n.* foam.

silamai, *v.* to fight, to scold.

silamiz (?), ngur silamiz, *v.* to wink.

silimailai (s), *n.* an uproar, a tumult.

sinapi, *n.* mustard. The Greek σινάπι.

sinupa (s), *n.* illustration.

sinupasinupa (?), tana tuelv gorsar a iapopoizō nubepa keda, midō paru sinupasinupa inō, the twelve asked of him the parable. Mark, iv. 10.

sinuseikai, *ad.* while (?), noi sinuseikai mulizō, while he yet spake. Mark, v. 35.

sipalsei, *pron.* you two there.

sipoibi, *v.* to hiss.

sīrasīra (M), *n.* name of a tree, the bark of which is made into fishing lines.

sirisiri, *v.* to grow up (?). Mark, iv. 8.

sirisor, *v.* to grow, = sirisiri.

sirsirnö (?). Mark, iv. 19.

siwagöi = söwagai. [siwagöiu.]

sizi = siezi, from there.

sküri = sükori.

sobaginga, *a.* smart.

sobaidiz, *v.* to be slow.

sobara, *n.* a dish, charger, Mark, vi. 25, perhaps an introduced meaning for sobera.

sobera (τ, η), a mat made of pandanus leaves used in the initiation ceremonies (410). (Cf. tiro of Daudai vocabulary.)

söbi = sabi. [söb'a.]

soger (τ, mb), *n.* a mourning dress; (368) *pl.* sogerl.

soka (μ), *a.* sick.

soki, *n.* a spike made of cassowary bone, a dagger.

sölsimizi (μ, s), *v.* to wallow.

soroi (η), *n.* entrails, "guts."

sorsimiz, *v.* to move (perhaps move about). Cf. solsimizi.

söwagai, *v.* to plant.

söwakai, = söwagai. [söwakaiu.]

sowaka,

sowaki = söwagai.

sowar (μ), *n.* a species of yam. Cf. ketai.

sringi (μ), *n.* a cane loop or sling for carrying heads.

suagai (β), *n.* witchcraft.

sügu (μ), *n.* the cuttle fish; the octopus (Badv). Cf. ati.

suguba, sugubö (μ), *n.* tobacco; sugubö wanipa (μ, β), *v.* to smoke in Papuan fashion, *i.e.* drink tobacco; sugubö marapi (μ), *n.* a tobacco pipe (of bamboo). Cf. sukub.

suidaninipa (β), *v.* to crouch.

sükori (η), an arrow with head made of a narrow, split bamboo, used for shooting pigs.

suka (μ), *n.* tobacco (Jukes).

sukub, (η), sukubu (τ), sukuba (β), *n.* tobacco; sukuba-marap (s), *n.* tobacco pipe; sukuba supö (β), *n.* a cigarette.

sulan (s), *v.* to pour.

sulan (?), tana akan sulan mabaegöngu, they feared the people. Mark, xi. 32.

sulangi (μ), = surlangi; *n.* the turtling season (μ).

suliz, sulizö, *n.* a drop ; juice.

sulupan (?), kuikaiman naino mosan sulupan, began to spit on him.

Mark, xiv. 65.

sulur (м), *n.* the green turtle.

sumai (м, в), *n.* cold ; sumainuwedan (в), *v.* to tremble (to be out in the cold).

sumein (м), *a.* cold.

sunā-suro (м), *n.* the hind fins of the turtle.

sungi, *n.* a sling for carrying heads. Cf. zinge, sringi.

sünö (м), *n.* the tail of the dugong.

supa (в), *n.* a white louse.

supamipa, *v.* to bear false witness. Mark, x. 19. Cf. ia supaman.

supnuran (s), *v.* to cover ; *a.* wrapped, covered.

supö (в), *n.* a cover ; a bale ; sukuba supö (в), *n.* a cigarette.

surka, *n.* the scrub turkey (*Megapodius*) (wild fowl) ; surka pada, the mound of the megapod.

surläl, *n.* the pairing of the turtle.

surlängi, *n.* the turtle season, or the season when turtle pair (350).

surö (в), *n.* a pole for poling a canoe.

suru (м), poles or yards of sails.

surum, *n.* sand.

susu (м), *n.* the breast ; gum, milk ; nine, in counting on the body ; wadegam susu, eleven, in counting on the body ; susu gud (м), *n.* the nipple ; susu nur (Macgillivray), *n.* the nipple ; susu madu (mb), the nipple ; susu mina (mb), a scarified mark on the breast.

suzu (s), *v.* to suck, = susu.

Ta (s, в), *n.* a feast.

tabai, *n.* the shoulder, *pl.* tabal.

tabal-uradiz (s), *v.* to carry on the shoulder.

tabai, *demons.* those.

täbom (м), *n.* a long petticoat.

tabu, *n.* a snake ; *pl.* tabul ; umal tabu, a poisonous snake ; kasa tabu, a harmless snake.

tabu, *n.* pith, perhaps also the spinal cord.

tabukiri, *n.* hate, anger ; *v.* to be offended at.

taburid (mb) *n.* the spine. Cf. göruridö, tabu, rid.

tädar, *n.* a large fly, the blue-bottle.

tadaunaizimael, *n. pl.* fragments.

tadaunaizinga, *n.* things remaining, fragments. Mark, vi. 43. Cf. unaizö.

tadin, tadina (*s, B*), *v.* to covet; to shoot an arrow. Perhaps really means attain, reach something aimed at; tadmin. Mark, xvi. 20, confirm.

tadin (*s*), *v.* to rub.

tadiz (*s*), *v.* to rub.

tadu, *n.* a kind of crab; tadu kap (*mb*), *n.* the crab dance (362).

taeak, *n.* an arrow. Cf. tarek, taiak.

taeamoin, *v.* to pick, to choose. [taiamoin.]

taean (*s*), *v.* to throw, to dash; to invert, shove; to roll; tubal-taeen, *a.* round; kuik-taeen, *v.* to nod; guda-taeen, *v.* to sacrifice. [taeaman, taeamoin, töcaipa, toiaipa, toetailai.]

taga (*m*), *n.* the mangrove. Cf. biu.

tagi (? language).

tagir (*s*), *a.* dull.

tägur (*m*), the name of a plant, a species of flag (*Philydrum*).

tai (*mb*), *n.* a place for mourning; probably any open place where ceremonies or dances are held.

taiiai (*n*), (Legends, 180).

taiak (*B*), *n.* an arrow.

taiamoin = taeamoin. See taeen.

taiëk (*mb*) = taiak.

taidisa (*B*) = toidai.

taiermin (?), ngara-taiermin, *n.* a dance with jumping (362).

taima, *n.* a partition, a boundary. Cf. töimia [taimanu.]

taimi (*s*), *n.* boundary.

taiokwöd (*T*), *n.* the sacred meeting place of men for the initiation ceremony (409). Cf. tai, kwöd.

taiwa (*B*), *n.* the coast. Cf. tawala.

taiz, taizö (*s*), *n.* position; wakai-taiz, *v.* to recollect; kulai taiz, *v.* to be first; wägel taizö, to be last. Mark, ix. 35.

takam (*n*), *n.* the name of a fish.

taku (*m*), *n.* a three- or four-headed fishing-spear (333).

tal, *n.* a finger-nail, or toe-nail; the oval piece of melon-shell cemented on to the handle of the kobai, or throwing-stick (333).



taldan (s), *v.* to cross; *ad.* across. Cf. tardan.

talpura (m), *n.* glass, a bottle. Cf. Mir. tarpor.

tam, tamö (s, b), *n.* a branch, a bough; *pl.* tamal.

tamaingina, *a.* without branches.

tamain,

taman, *v.* to witness, bear testimony. Mark, xv. 4.

tamiz, *v.* to leave.

tamamoingina, see wakaintamamoingina.

taman (s), *n.* the shore. Cf. taiwa, taima.

tamananga (s) = tamö.

tamoi (b), *n.* the "iguana."

tamu (m), *n.* the platform of a canoe (Macgillivray). Cf. the Mir.

tum, top. The correct word is, no doubt, natara.

tamudan (s), *v.* to shut, to close.

tamudara (b), *n.* a door, that which closes the opening. Cf. pasa.

tana, *pron.* they.

tanabadö, *a.* blue.

tanaman (m, s) *pron.* their.

tanamul (s), *pron.* them.

tanamulngu, *pron.* from them.

tanamun, *pron.* their, theirs.

tanamunia, *pron.* with them.

tanatana (s), *pron.* themselves. [tanatanamulpa.]

tanenipa (m), *pron.* for themselves.

tang. Cf. tam (371).

tangu (s), *n.* a feast. Cf. ta; tangu tonar, feast time. Mark, xii. 39.

tanlgi (m), *n.* name of a fish, *Diacope octolineata*.

tanoriz, *v.* to sit; kadai-tanoriz, *v.* to arise.

tanu, *v.* to sit (?) tana nubepa getö asin tanu, them that sat with him.

Mark, vi. 22.

tanure, kadi tanure (m), to stand up.

tanureipa (m), *v.* to sit down.

tanuriz = tanoriz; kadai tanuriz, *v.* to arise.

tapamoin. See guda-tapaman.

tapan (m), *n.* a species of yam, *Convolvulus*. Cf. ketai, sowar.

tapeipa (m), *v.* to swim.

tapi, *n.* the sting ray. Cf. waki.

tapi (s), *n.* position; *v.* to spread, to swim.

- tapi (m), *n.* a part of anything ; a half. Cf. mugu.  
 tapimula (Mb) = tapi, sting ray.  
 tara, *n.* the shin.  
 tarai, *a.* quick, suddenly = tari.  
 taraitarai (B), *n.* haste.  
 taran (? to cut), Mark, xiii. 20, noidö taupain kai taran, he will cut short.  
 taratar (s), tartar (B), *v.* to boil.  
 tarbar narberit (m), *n.* the shoulder. Cf. tabai.  
 tardan (s), tarödan, *v.* to cross ; *ad.* across. Cf. taldan.  
 taregi (m), *a.* slow.  
 tareipa (m), *v.* to touch.  
 terek (m), *n.* an arrow. Cf. taiak, terig.  
 tari (m), *ad.* quickly, = tarai.  
 tarika (m), *n.* a gun.  
 tariza (s), *v.* to arise ; the word seems really to refer simply to a movement of the body ; kadai-tariz, to arise ; kulun-tariz, to kneel  
 tarizelam, tarizilamiz. *v.* to run.  
 tarö (m), *n.* the nails of finger or toe ; the claws of a bird. Cf. tal.  
 tarödan = tardan.  
 taröiginga (?), mabaeg wörögi taröiginga, whereon never man sat.  
 Mark, xl. 2.  
 tarötaiz, *v.* to take in, to go in (of plants and seed) (?). Mark, iv. 8.  
 tarötöiaiginga, *v.* not to take in, not to understand (?) ; tanamun  
 korkak tarötöiaiginga senabi ia, they understood not that  
 saying. Mark, ix. 32.  
 tarpeipa (m), *v.* to sew.  
 tartaeen, *v.* to delve. Cf. tarötaiz, tarte, taeen.  
 tarte (m), *n.* a hole ; tarte paleipa (m), *v.* to bore a hole. Cf. terti.  
 tarpeipa (m), *v.* to turn over.  
 tatagamulinga (B), *a.* brown.  
 tata, tataia, *v.* to stammer. Cf. tratra.  
 tati (m), *n.* father ; the general term, not vocative ; keuba-tati, *n.*  
 uncle. [tatipa.]  
 tatureipa (m), *v.* to make (said of men's work).  
 tauanga, *a.* light, easy. Mir. pereper  
 taumi (B), *n.* an ant.  
 taupainanga (s), *a.* short.

taupain, taupainga, *a.* short; taupain törainga, not to shorten.

Mark, xiii. 20.

tauradiz = töridiz, kama-tauradiz, *v.* to nurse in the arms.

tawala (s), *n.* the shore. Cf. taiwa, taima.

tawpei (m), *a.* short, low. Cf. taupainga. Mir. teupai.

tazo,

teio, teipa (m), *v.* to throw into.

ter, tera (m), *n.* bitterness; savour (in Gospel), *v.* to flavour; alasiu ter, the saltness, Mark, ix. 50; ter unaipa, to leave a taste, to savour.

teralnga, *a.* sour.

terari (m), *a.* sour.

terig (m), *n.* an arrow.

terku (r) = turku.

terti (mb), a hole; piti terte, *n.* a hole in the septum narium (406). Cf. tarte.

tete (b), *n.* the leg.

thi (m), *n.* a cliff.

thölpën (?), sepal magina mani keda wadögam sapi thölpën, two mites which make a farthing. Mark, xii. 42.

thung (m), *suffix*, like, same as.

ti (b), *n.* bread fruit.

tiap (mb), tiapi (m), the wrist.

tiati (b), *n.* a traitor.

tiapururu (mb), *n.* a string armlet (394).

tidaimipa (b), *n.* joint.

tidan (? to make or put out); balbai tidan (s), *v.* to rectify, make straight; tonar tidan, tonar tidanö, *v.* to testify, to mark, to prove.

tideipa (m), *v.* to break, as a stick.

tidiz, *v.* to retreat; kunia tidiz (s), *v.* to return.

tigi (s, b), *n.* the brain.

tigu, *n.* headache.

tikat, *n.* a flea.

tiki (m), *n.* the name of a shell (*Sanguinolaria*).

timī, *n.* the name of a plant, *Abries precatorius*; timī-kapu, *n.* small red and black timi seeds (crabs' eyes) *pl.* timi-kapul.

tiom (?), magi tiom (s), *n.* boy.

- tira (mb), *n.* the holes bored in a canoe and its gunwale.  
 tira (m), *n.* the leg; the ancle.  
 tiriap (mg), *v.* to sneeze.  
 tiridisa (B), *v.* to lift, = töridiz.  
 titan,  
 titoi (B), *n.* a star, = titui.  
 titu, *n.* a star, *pl.* titul.  
 titui (s), *n.* a star.  
 titui (?), kutam-titui, *n.* a species of hawk.  
 titure (m) = titui; gariga titure (m), *n.* the morning star; titure uzarizi (m), a falling star.  
 töad (s), *n.* the roof of a house.  
 töaizinga, *n.* things that are thrown; ngitamun kakurupa töaizinga, things thrown to your feet, your stumbling blocks or trespasses.  
 Mark, xi. 25.  
 tobai (r), *n.* a mat.  
 töbud (?), senabi töbud burumau ulak, a great herd of swine feeding.  
 Mark, v. 11.  
 töda, *n.* a bee.  
 todi (m), *n.* tortoise-shell.  
 todi (m), a fish hook (? made of tortoise or turtle shell). Cf. tudi.  
 tödipa (?), apia tödipa, to pass by (apia, from apö).  
 töeaipa. See taean.  
 togui, *n.* fin (?); baidama togui (n), *n.* shark's fin; baidama sai togui (n), *n.* a shark's tail.  
 toiai. See taean.  
 toiaipa. See taean.  
 toidai (s), *v.* to bite. [toidiz.]  
 tödail, *a.* wild, *i.e.* biting; toidail urui, *n.* wild beasts. Mark, i. 13.  
 toidal (s), *n.* animals. See tödail.  
 töidan, *v.* to dip; kuli toidiz, *v.* to steer.  
 toidi (s), toidiz, *v.* to bite.  
 töimia (s), *n.* boundary, = taima.  
 töitupagailai, *n.* prayer.  
 töitupägaipa, töitupägaipa, *v.* to pray; *n.* worship. [töitupagiz.]  
 tökiüp, *n.* a man's brother, or woman's sister. Cf. babüd, tukēap.  
 tökoiap = tukēap.

tökuiapö (ʙ) = tökoiap.

toma (?) = tuma; senabi nubepa toma ngönanumani senabi korkak badaginga, to love him with all the heart. Mark, xii. 33; lest. Mark, iii. 9.

tomaka (s), *ad.* perhaps.

tömamiz. See ukain.

tomamoinginga,

tomar,

tonar (s), *n.* a sign, time; a mark or cicatrice; an exhibit (s); aingu tonar, food time. Mark, xii. 2. The equivalent of the Mir. mek. tonar tidanö, tonar tridan, *v.* to testify, to mark, to prove; *pl.* tonaral.

töngawa (?). Mark, ix, 42.

topi, *n.* the name of a bird.

töra, *n.* a ridge. Cf. köru.

törainga (?), urapon ia ina ngibepa gamu törainga, one thing thou lackest. Mark, x. 21. Probably a misprint for töridainga.

toridainga, töridöinga, *v.* not to receive.

toridan (s), *v.* to sail.

töridan, *n.* a neighbour.

töridiz (s), *v.* to carry, lift, raise; to accept, receive; kuibur-törödiz, *v.* to be tame.

tormai. See ia tormai.

totaku (mb). *n.* the hull of a canoe.

töti = tati. [tötü.]

towanga, *a.* easy, light. Cf. tauanga.

tra, *n.* the hills of the termites.

tradiz = tadiz.

tragör, *a.* hard (? = tagir, dull); tanamun tragör korkak, their heart was hardened. Mark, vi. 52.

trapot, *n.* the dorsal fin of a fish; muingu trapot, mutu trapot, *n.* the pelvic fin.

tratra, *a.* deformed; stammering, having an impediment in the speech; tratra idaig, *n.* stammerer.

tridai,

tridainga,

tridan = tidan.

tridiz = tidiz.

tridizö = töridiz.

tritraingia. See getö tritraingia.

tritraizi, *a.* withered; tritraizi gitalenga, having a withered hand.

Mark, iii. 3.

triträn = tidän.

tronar = tonar.

tru (?), tru minera (r), *n.* a mark on the side of the face.

trukuiap = tukuap.

tsika (x), *n.* a foam. Cf. sikö.

tu (mb), *n.* a petticoat made of shredded coconut leaves worn by men when dancing (365).

tu (s, b), *n.* smoke; dust (Macfarlane).

tuana,

tubal (?), tubal-taeän (s), *a.* round.

tübö (?), tana ngitamulp tubö nidaingia, whosoever shall not receive you. Mark, vi. 11.

tudan (?), döra tudan (s), *a.* weeded.

tudi (x), *n.* a fish hook. Cf. todì.

tüga (x), *n.* a mangrove swamp. Cf. taga.

tugö (mb), *n.* pole of outrigger.

tuginga, *a.* clean.

tuidan (?), nguki-tuidan, *v.* to urinate.

tukëap (x), *n.* a man's brother or a woman's sister (Macgillivray); a friend, a guest, a cousin (b).

tukuap (s), *n.* a companion, a mate.

tulaingia, *a.* clean.

tulainga (s), *a.* dirty.

tuma (b), *v.* wait-a-little; *conj.* until; tuma lakö kai igililenga mabaegau kazi umangu, till shall be living again the son of man from death. Mark, ix. 9.

tumai,

tumatuma (x), *adv.* by and by, presently. Cf. tuma.

tumaiaian (s), *a.* attending.

tumawaeän, *v.* to compel.

tumi (x), *n.* a small black ant.

tumit (x), *n.* dirt.

tumitäle (x), *a.* dirty.

tun, tuna (x), *a.* a large barbed javelin or "spear" (333).

tunan (mg), *v.* sleep (D'Albertis).

tuo (m), *n.* smoke. Cf. tu.

tupaltaean, *v.* to fold (= tu, Eng. two, pal = pala, taean).

turam (?), iadu turam, *v.* to inform.

tureipa (m), *v.* to call for; turan (s), *v.* to call, to bid (s).

turik, turika, *n.* iron, a blade; aga turik, *n.* an axe; gi turik, *n.* a knife; elap turik, *n.* hoop iron; turik plagusi (s), *n.* an iron pot.

turk, turkō (n), *n.* the bowl of a bamboo tobacco pipe.

turkēkai (m), *n.* a man.

turkiam (n), (?) turkiam merkai.

turkikai, *n.* a cock-fowl.

turkü (s) = turk.

turong (m), *a.* light. Cf. towanga.

tusi, *n.* a letter, a book. A Samoan word introduced *vid* Lifu; hence, tusi mina, Bible, *i.e.* precious or true book.

tutio,

tutu, *n.* a rod.

tuwa (377).

U, *suffix* denoting the possessive case, of.

ua (m), *ad.* yes.

uari (x), *n.* lime.

ubalō, *n.* bladder; ubal-madu (s), *n.* the calf of the leg.

ubi (m), *n.* greediness; *v.* to want (s).

ubigasin, *v.* to dislike (Macfarlane).

ubigiasin (s), *v.* to ignore, to be without a wish for.

ubigösia (?), noi ubigösia kunia onailai, he would not reject her.

Mark, vi. 26.

ubile (m), *a.* greedy.

ubilnga, *n.* will, wish; ngau ubilnga lakō maigi, kapuza nginu ubilnga, not my will but thy will. Mark, xiv. 36.

ubimepa = ubinmepa.

ubin, *n.* a wish.

ubinmepa (s), ubinemepa, *v.* to wish, to desire, to like. [ubin-meamaipa.]

ubinmizi (s), *v.* to love.

- ubu (u), *n.* the name of a plant (*Melaleuca* (?)). See wobu.
- ubur (u), *n.* the name of a plant (*Mimusops kaukii*.)
- udar (u), *n.* an oar. Cf. Mir. uzer.
- udas-poidan, *v.* to rescue, to save. See oudazi.
- udu, (u), *n.* the arm, the upper arm.
- udumä (u), *n.* dirt.
- udup, *n.* hiccough.
- ugan, uganö (s), *v.* to wait.
- ugauganpagaip, *n.* noise.
- uiai,
- uialai. See gudauiailai.
- uiamai, uiaman, uiamoin, uiamon. See wakaea-uiaman.
- uiu, *n.* side.
- uka, (s), *a.* two.
- ukailenga (?), Iesu muasin walmizin senabi koiaböu ukailenga, after  
Jesus cried with a loud voice. Mark, xv. 37.
- ukain (?), senabi warwar ukain tömamiz, the cares of this world.  
Mark, iv. 19.
- ukamenamö (u), *a.* double.
- ukamodobilgal, *a.* three, thrice (Macfarlane).
- ukamodobilgal, *a.* third.
- ukamoin (? double), tana lakö worgi ukamoin umanga, these shall  
receive greater punishment. Mark, xii. 40.
- ukasar, *a.* two; ukasar-ukasar, four.
- ukasukusukö (?), mata ngadagido ngi muia utizö nabi igilelenga a  
nginu getö paunapa patan a ukasukusukö kalmel genapa taean,  
it is better thou enter into life maimed, than having two hands  
to go into hell. Mark, ix. 43.
- ukasure = ukasar.
- ukatam, *a.* ripe. Cf. katam.
- ukauka (u), *a.* four; ukauka modobai, five.
- ukesar (u), *a.* two, = urapon; ukesar warapon, three.
- uki (u), *n.* fresh water (Jukes). Cf. nguki.
- ukösa (u), *n.* two, = uka.
- ukwäsur (uquassur, Macgillivray) (u), *a.* two. (uquassur waräpune,  
three; uquassur-uquassur, four.)
- uladiz,
- ulaig (?), tanamulpa göngu ulaig, healed them. Mark, vi. 5.



ulaipa, *v.* to follow. Mark, xiv. 54.

ulak (?), senabi töbud burumau ulak, a great herd of swine feeding.

Mark, v. 11.

uleig (м), *a.* wet. Cf. urainga.

uleipa (м), *v.* to come, to approach.

um (s), = uma.

uma (м), *a.* dead; *n.* death; *v.* to kill (s); uma-matan (s), *v.* to drown,

umau lagö (s), *n.* house of dead, tomb; uma kazi, *n.* abortion;

uma mataman, *v.* to murder; umau nguki, poison. [umau;

umapa, umangu.]

umagigal, *a.* not dead.

umaginga, *v.* not to die.

uma-gud (s), *a.* stale.

umai, *n.* the dog, *pl.* umail; umai-dangal (мb), *n.* a necklace or coronet of dogs' teeth.

umal (в), *a.* venomous, deadly.

umaliza, *n.* (a deadly thing?); umalizö matumeipa (м), *v.* to wound.

umamail, *n.* the dead.

Umamöipa (?), ngita ia umamöipa tana mulpa? What question ye with them? Mark, ix. 16.

uman (?), ia uman, *v.* took counsel, Mark, iii. 6; tanatana ia uman, they said to one another. Mark, iv. 41.

umanga, *a.* dead, sick; *v.* to die; *n.* death.

umangange (?), noi kedangadalnga umangange, he was as one dead. Mark, ix. 26.

umanguzö, *n. abl.* from the dead (?).

umapa (s), *v.* to kill. Cf. uma, umanga.

umaulai (?), tana getöwanizö senabi umaulai dögam utui, they let down the bed wherein the sick of the palsy lay. Mark, ii. 4.

umeipa (м), *v.* to make (said of women's work). Cf. tatureipa.

umem (мg), *n.* death. Cf. uma.

umen (?), burumal köi umen nanitan, the swine ran down a steep place. Mark, v. 13.

umizin (?), noi paunap a umizin, let him die the death. Mark, vii. 10.

umkuki (humkuki) (мg), *n.* water.

umu, probably = gamu.

umuwalepa (s), *n.* palsy; *a.* faint, trembling.

- una,  
 unab (s), *a.* safe.  
 unabo (s), *v.* to bless.  
 unaigi (?), getö mina unaigi, hath never forgiveness. Mark, iii. 29.  
 unaipa (?), ter unaipa, to savour (taste remains). Cf. unaizi.  
 unizimaen, *n.* fragments, remain  
 unaizi, unaizö (s), *v.* to remain behind, to be left; senabi kalapa unaizö ipokazi, the woman that remained behind. Mark, xii. 19.  
 nuao (м), *n.* the hawk's-bill turtle.  
 unawa, *n.* turtle-shell. Cf. wanawa.  
 ungwakazi (B), *n.* woman. Cf. ngawa kazi.  
 uotiz, *v.* to disappear.  
 upi, *n.* a large bamboo knife.  
 upiri (B), *n.* poison.  
 upiuz (s), *v.* to whistle.  
 upu (м), *n.* a chain of ponds; a blister.  
 ur, urö, *n.* water, brackish water (B); ur budaman (B), *n.* raft; urö waisa (B), *n.* flood tide; urö noriza (B), *n.* ebb tide. Cf. wër.  
 ur (mg), *n.* fire. Cf. miriam ur.  
 urab, urabö, urap, *n.* the coco-nut, the drinking nut; urab a bura (м), *n.* coco-nut leaf. Cf. mutale, gi, baribara.  
 urai. See ur, urö; urai dudupisa (B), *v.* to drown.  
 urainga, *a.* wet, moist.  
 urapa (s), *a.* the same.  
 urapon (s, B), *a.* one.  
 uraponia, *v.* to agree. Cf. urapon, ia.  
 urapu = urapon, urapa; urapu ia, the same words. Mark, xiv. 39.  
 urapun, urapuni (м), *a.* one, = urapon; urapuni-getäl, five.  
 urazi (мb), *n.* the olive shell.  
 ure (м), *n.* a bird, an insect, a shell, = urui, uroi; natam-ure, *n.* a temporary name for us, quartz. (338).  
 urge (м), *a.* wet. Cf. urai, ur.  
 urge (?), urge daje (м), *n.* a long petticoat.  
 urilonga (м), *a.* nothing (Macgillivray).  
 urimanö (B), *v.* to strike.  
 urma (м), *n.* dew.  
 urmi (s), *a.* ferocious.  
 uro (м) = uru.

- uroi (м, б), *n.* an animal, a bird, an image; uroi lagö (б), *n.* a cage;  
 urui palgiz, *n.* bird.
- urpu, *v.* to anoint.
- uru (м), *a.* white.
- uru (mb), *n.* rope used for turtle fishing.
- uru (mg), *n.* the sea. Cf. ur, urö.
- urudan (sv), *a.* obscured. Cf. iradu.
- urugabau (s), urugabao (б), *n.* sweet potato. Cf. rugäbu.
- urui (н) = uroi, a mask.
- urukamö, *n.* rope, string; mapil urukam (s), *n.* chain.
- uruwain (mb), a stone used in sorcery (399.)
- urupugan (s), *v.* to bathe.
- urza (м), *n.* the loggerhead turtle.
- us, *n.* a cut, a cicatrix.
- us (м), *n.* quartz.
- usa (м), *n.* the kangaroo. Cf. usaru, usur.
- usabutu, *n.* salt. Cf. alas.
- usal (?), mausa-usal, *n.* a scarification of the cheeks, = bagamina (367).
- usar (s), *v.* to walk, go.
- usaru (б), *n.* the kangaroo, wallaby. Cf. usa, usur.
- usimai (s), *v.* to extinguish.
- usimaipa gub, *v.* to kill the wind (427).
- usimoi (s), *v.* to extinguish.
- usimoiginga, *v.* not to extinguish.
- usur (м), *n.* the kangaroo, = usa, usaru.
- utaiginga, *v.* not to enter.
- ute (м), *n.* sleep.
- uteipa (м), *v.* to sleep.
- uteipa (м), *v.* to enter, to go out of sight. [utem, uteman, utemin,  
 utiz, utizi, utizo.]
- utiz, utizi, utizö (s), *v.* to hide, to go into, to enter.
- utoi = utui.
- utointiaipa, *v.* to doze.
- utömoim, *v.* to join.
- utu (м), *n.* honey.
- utu (м), *n.* a small palm (*Seaforthia*).
- utui (s), *v.* to lie down, to sleep; *a.* asleep.
- utuilö (s), *v.* to dwell.

- utuipa, *v.* to lie down, to sleep.  
 utulag (mg), *n.* a house (Stone), lit. = sleeping-place.  
 utumiz, utumoin, utumoizinga. See iautumiz.  
 utuipa, *v.* to sow.  
 utuna (B), *v.* to plant.  
 uza (T), *n.* a small cowry. Cf. ooja.  
 uzai (M), *a.* putrid.  
 uzameipa,  
 uzar, *v.* to go, to walk, to depart. [uzaripa, uzariz, uzareman, uzarman, uzarmöriu.]  
 uzaripa (M), *v.* to go away.  
 uzarizi (M), *v.* to go away; titure uzarizi (M), *n.* a falling star.  
 uzarmöriu *v. imperat.* go; ngipel uzarmöriu, go ye two.  
 uzimeipa (M), *v.* to go out (as a fire). Cf. usimai, usimoi.  
 uzu (M), *pron.* mine (if a female).  
 uzur,

Wa, *ad.* yes; *v.* to acknowledge; particle of emphasis preceding verbs,  
 wa kapuza ina ngita adataean Augadan sabi, full well ye reject  
 God's law. Mark, xii. 9.

- waba, *n.* dove.  
 wad (mb), *n.* a fish with blue spots.  
 wādai (T), *n.* a large, red, flat bean or seed.  
 wadan (S), *v.* to caution, to detain.  
 wadegam = wadögam, wadegam susu, eleven, wadegam-zugu, twelve,  
 in counting on the body.  
 wadögam, *n.* the farther side, Mark, x. 1; wadökapa, to the other side.  
 wadokam (S), *n.* half, the other side; wadökam malu, the other side  
 of the sea. Mark, v. 1.  
 wadökapa. See wadögam.  
 waduam, *n.* uncle. Cf. keuba-tati.  
 waeam (S), *v.* to send. [waeaman.]  
 waeapa, *v.* to swim.  
 wagal (S), *ad.* behind. See wapel.  
 wagar, *exclam.* yea! yes!  
 wagedegam, *n.* the west.  
 wagedö (S), *a.* other.  
 wagedöka, *n.* the other side. Cf. wadögam.

wagel (m, s), *ad.* last, after, *v.* to come after. Mark, xiv. 28.

wagetäl-wagëtal (MOA, BADU), ten (lit. one hand and one hand).

wahu, *exclam.*

waia,

wainginga (? mainginga), iabuia wainginga, nothing by the way. Mark, vi. 8.

waiitutu (m), *n.* the saw-fish; waiitutu kap, *n.* the saw-fish dance.

wainis (mb), *n.* a small bull-roarer with a shrill sound (375).

waipa (B), *n.* a land-shell.

waipat (mb), *n.* a head-dress consisting of a single plume.

waia (?), urö waia (B), *n.* flood tide.

waitud (mb) = waiitutu.

waiwai, *n.* the testicles. Cf. waiwi, mango.

waiwi (mb), *n.* an armlet made from the shell of the *Conus millepunctatus* (339).

waiwi, *n.* the mango.

wakabi (mb), *n.* an instrument used in mat making.

wakadar, *n.* a dale, valley.

wakaea,

wakaeen, *v.* to chase, to pursue.

wakaeangan, *v.* to be patient.

wakaea-uiamoin (?), *v.*; köi görköziw wakaea uiamoin, *n.* chief priests.

Mk., xiv. 1. [wakaea-uiamoin, wakaea uiamon, wakaia-uiaimai.]

wakai, *a.* ecclesiastical (Sharon); wakai mumugu sigaman (?) Mark, v. 15, xii. 36.

wakai (?), kapu wakai böie daparngu adapadan, a voice came from heaven. Mark, i. 11.

wakaia-uiaimai. See wakaea-uiamoin.

wakaiaasin, *v.* to pity, to regret; to have sympathy, to mourn; *n.* grief. [wakaiaasimoin.]

wakaimizin, *v.* (?); ada wakaimizin, *n.* spite.

wakaintamamiz (s), wakaintömamisö (B), *v.* to think, to consider.

wakaintamamoingia, wakaintömamoingia, *v.* not to consider, not to think.

wakaiaasin = wakaiaasin.

wakaiaupaman, *v.* to lead astray.

wakaitaiz, *v.* to recollect, to understand. [wakaitamain.]

wakaitamamai, *n.* thought.

wakainiaipa (?), ngai ngitamunia wakaiuiaipa puzipu, I was daily with you teaching. Mark, xiv. 49.

wakasin (?), dōnga wakasin, *a.* savage.

wakasin = wakaiasin.

wakasu, *n.* oil; kaigōrsar kikirilaig wakasunu pinin, anointed with oil many sick persons. Mark, vi. 13. [wakasunu.]

wakau (*s, m, b*), *n.* a belt, the band of a petticoat; *pl.* wakawal.

wake (*b*), *n.* the hornbill. Cf. worke.

waki (*m*), *n.* a sting ray; a spear armed with spines from the sting ray.

wakiantāmizō = wakaintamamizō.

waku (*m, s*), *n.* a mat; gul waku, *n.* a sail; duma waku, *n.* clothing.

waku (*b*), *v.* to sell. (Perhaps a misprint for sail).

walaika (*mg*), *v.* to walk.

walap, *n.* a hat; pātralaē pui patan walap, plaited thorns (for) a hat.

Mark, xv. 17.

walchi (*m*), *n.* the name of a plant, *Xerotes Banksii*.

waleipa (*m*), *v.* to climb.

waleipa (?), gi waleipa (*m*), *v.* to laugh.

walepa. See umuwalepa.

walgan (*b*), *n.* an adze.

wali (*m*), *n.* name of a creeping plant, a vine used for making fishing lines, hence a fishing line; a cord, twine (*b*).

waliz, walizō (*s*), *v.* to climb, ascend.

walkadun (*m*), *n.* a wallaby.

walmizin, walōmizin, *v.* to call, to proclaim, to cry out. Cf. walō.

[walmer, walmeamain.]

walnga (*mb*), *n.* "rock-fish."

walō (*b*), *n.* a cry; a cooey.

waltidun, *v.* to cry out (*pl.*). Mark, xv. 13.; they cried out.

walunga, *n.* the steering board, "rudder" of a canoe.

walupa (*s*), *v.* to plant.

wama (*t*), wamō, *n.* honeycomb; wamau-idi (*t*), honey (lit. honeycomb's oil). Cf. isau.

wamen (*s*), *v.* to walk quick.

wamenudiz (*s*), koi wamenudiz (*s*), *v.* to ebb, of the tide.

wamulaigō (*b*), *n.* a sister who has children.

wanan, *v.* to put, leave, deposit (*s*); durai wanan, *v.* to remain; sibu

wanan, to pity. [wanemiu.]

wanawa (*b*), *n.* turtle shell. Cf. waru kara, unawa.

wanemiu. See getōwaniz.

wanēs (m) = wainis.

wangai, n. the "wild plum."

wangepa (m), v. to fill (with solids), seven ianalō wangamoinō, they filled seven baskets. Mark, viii. 8.

wani (mb), n. the soft turtle.

wani, n. drink.

waniman. See wanipa.

wanin (b), v. to drink.

wanipa, v. to drink; suguba wanipa, to smoke, i.e. to drink tobacco.

[wanin, waniu, waniman.]

wanizō (s), v. to drink.

wanizō (?), paget-wanizō, v. to slip.

wan-nur (m), v. don't.

wap, n. a dugong spear (351).

wapāda (m), n. the cotton tree (*Bombax*.)

wapai (m), n. the forearm.

wapi, n. a fish; pokam wapi (mb), n. the flying fish.

wapu (m), n. the shaft of a dugong spear. Cf. wap.

war = wara; war dadim, a. two in counting on the body.

wara (m, s), a. another; a, an, one (s); wara . . . wara, the one . . . the other.

warabon = urapon, one; warabon augosa, three.

waradogam (s), n. east.

waralaig (?); dorgai waralaig, name of a constellation. (Legends, 31).

warange (s) = wara.

warānis (m), n. a green pigeon.

warapon (mg) = urapon, one; ukesar-warapon, three.

warāpune (m), a. one, = urapon.

warawara,

waraz, n. the olive shell. Cf. urazi.

wardadim. See war.

wardan, n. an eclipse.

wargaiga (b), n. yesterday.

warō = wara.

waroi (mb), n. a common siluroid.

warōgiawaliz (?) ngaukalō ngapa uzar parpar warō giawaliz, after me cometh another mightier than I. Mark, i. 7. (giawaliz perhaps = giuwaliz.)

waru, *n.* a turtle; tortoise (mg); warukaz, a young turtle; kidu waru, the end of the turtle season; waru kara, turtle shell. Cf. iniltiam.

warup, *n.* a drum.

warwar (?) senabi warwar ukain tömamiz, the care of the world. Mark, iv. 19.

wasalolnga, *a.* rough.

wasili (x), *n.* a kind of basket.

wata (s), *n.* dry wood, fuel.

watal,

watang (m), *a.* dry.

wata' pateipa (m), *v.* to dry up; wata patain (s), *n.* dry ground; watö patan nanu kulka, her blood dried up. Mark, v. 29.

watar, watarö, *n.* firewood, fuel.

watekum (m), *a.* sorry.

wati, *a.* bad, evil, abominable; wati ngarare (m), *a.* lame (bad footed); wati ganule (m), *a.* stinking (bad smelling); wate mitäle (m), *a.* bad tasted; wati kaurare (m), *a.* deaf (bad eared); wati parure (m), *a.* ugly (bad faced); wati kikiri (s), *n.* sin.

watipawa (s), *n.* sin, evil deeds.

watiza, *n.* a bad thing.

watö (s, b), *n.* a year; *pl.* watal; aigi watö, famine, foodless time.

Mark, xiii. 8.

watri = wati.

watripawa = watipawa. [watri-pawangu.]

watrö = wati.

watu (mg), *v.* or *n.* whistle.

watur (m), *n.* a log. See wata, watar.

wau (b), *n.* the betel nut (not eaten in Torres Straits); wau iana, *n.* a purse. Mark, vi. 8.

waura (b), *n.* the east wind; the south-east wind.

wauri,

waus (n), *n.* a funeral screen (320). Macgillivray, ii. 37.

wawpi (m) = wapi.

weäma (m) = wem.

weäsa (mg), *n.* the eyebrow. Cf. babasam, boibasamu.

weiam = woiam.

weibad, *n.* turtle eggs.

weidaman (?), mosöbauka weidaman, foaming. Mark, ix. 20.



weidan, *a.* greedy.

weidan (?), kula mura weidan, senabi mura kula weidan ina,  
buildings. Mark, xiii. 2. Cf. nguro-weidan.

weidizi,

welmeipa (м), to waken. Cf. wal, walmizin.

wem, *n.* the cockatoo.

wër (s), *n.* water.

wera (м), the stomach.

weragi (м), hungry (lit. no stomach). Cf. maita iginga, Mir. wererge.

wiamö (в) = weiam, woiam.

wibu (м), the name of a plant (*Parinarium*).

widan (s), *v.* to sew.

widizi,

wiepa (м), *v.* to give.

wier (м), *n.* the palm of the hand.

wila (м), *n.* a species of freshwater herring.

winipa (м), *v.* to get up.

witiganu, *n.* a stink. Cf. wati, ganu.

wobar, *n.* a fruit = ubur.

wobu (м) = ubu.

woiam (s), *n.* a joint.

woibadö, *n.* spawn. Cf. weibad.

wokailönga (?), Iesu walmizin senabi kõi nurainga kapu wokailönga,  
Jesus cried with a loud voice. Mark, xv. 34.

wokau (т), *n.* a belt, = wakau.

wokowai, *n.* a belt, = wakau.

womar = wome.

wome (т), *n.* a string game "cat's cradle" (361).

womer (м) = wome.

womer (т), *n.* a sea bird, perhaps the frigate bird. [canoe.

womiraukwik (т), *n.* a carved wooden bird's head for decoration of a

wönigi = wanigi, *v.* not to drink.

wönizinga, *n.* drinking.

worgi = wörögi; maigi wara kulanu worgi wanan kalmel pudailai,  
there shall not be left one stone upon another, that shall not  
be thrown down. Mark, xiii. 2.

worke, *n.* the hornbill. Cf. wake.

wörögi (s), *ad.* upon; mabaeg wörögi taröiginga, whereon never man  
sat. Mark, xi. 2.

woropu-taeen, to throw down, to stumble, to offend. Mark, ix. 43, 45, 47.

worpupudainganga (?). Mark, vii. 4 (not wash?).

wukö (B), *n.* gum.

wunu (M), *n.* a fog.

wur (M), *n.* the sea; wur pusakuradun, high water; wur nuremizingi, low water; wur kamizingi, flood tide; wur nurezingi, ebb tide.

wurup,

Za, zö, *n.* a thing; niai za, *n.* chair.

za (M), *affix*, expressing the thing spoken of.

zabai, *n.* the pectoral fin of a fish.

zabudamöin, *v.* to buy.

zadögam (S), *n.* the south.

zaget, zagetö, zagito (S), *n.* work, labour. Cf. za, getö.

zagetölaig, *a.* having work; noi zagetölaig kuikulumaingu, he has work from the Lord, the Lord needs him. Mark, xi. 3.

zagetopawa (S), *n.* a deed, a doing.

zagi (S), zagigal (S), *a.* penurious, poor (lit. without a thing).

zaginga, *a.* having nothing, empty.

zagitapa, *v.* to prepare, get ready.

zagita (S), *n.* work; *pl.* zagital. Cf. zaget.

zai (?), zai adu palganö (B), *n.* a signal.

zalaunga (?), mina zalaunga senabi göuga tanamulpa gamu puridöralenga, they that are whole have no need of the physician, Mark, ii. 17.

zamiak (?), na sulan ngau gamunu a zamiak ngaeapa maramatöiaipa, she is come aforehand to anoint my body (pour on my body) to the burying. Mark, xiv. 8.

zamozano (S), *n.* a tail ornament made of cassowary feathers used in a dance. Cf. nadur, kabonadur.

zamu (S), *n.* the cassowary. Cf. samo.

zanga (S), *n.* a thing.

zanguzangu (?), things, *pl.* Mark, x. 27, xi. 11.

zapawaeen, *v.* to send.

zapla (?), kabu zapla (T), *n.* discs held in the hand during a dance.

zapudamoin (S), *v.* to compensate, to gain, to sell.

- zapul (s), *n.* riches, wealth. See za, apu. [zapunu, zapuia.]  
 zapulaig (s), *a.* wealthy.  
 zapupamoin (?), misprint for zapudamoin.  
 zaputamoin = zapudamoin. [zaputamoigigal.]  
 zāram (m), *v.* name of a fish, *Pelates*.  
 sarzar (mb), *n.* leafy twigs.  
 zasei, = za, sei, these things.  
 zaungalaig (s), *n.* a shelf.  
 zazi (mb), *n.* a large leaf petticoat. Cf. gagi.  
 zazuman, *n.* firewood, fuel.  
 zeinga, *a.* level, smooth; *n.* a plait, a flap.  
 zelamiz = zilamiz.  
 zeza, *n.* a creek.  
 zi, *suffix* to pron. from.  
 zia (s), *n.* a cloud. [ziangu.]  
 zilamiz (s), *v.* to run.  
 zinga, *suffix*.  
 zinge (s), *n.* a sling for carrying heads, = sunge.  
 zirasān,  
 ziziman, *v.* to drive.  
 zō = za.  
 zogo (m) = zugu.  
 zorki, *n.* a spike of cassowary bone, used for husking coco-nuts.  
 Cf. soki.  
 zubnanamiz, zubō-nanamiz (s), *v.* to throng.  
 zugu (m), *n.* the arm, upper arm; eight in counting on the body;  
 wadegam zugu, twelve, in counting on the body.  
 zuguba, zugubu (s), *n.* tobacco.  
 zugukwoik (mb), zugu kuiku (s), *n.* the shoulder.  
 zūnga, *n.* a boy or lad before initiation. Cf. karingi, kēnge,  
 kaukwik.  
 zunga, *n.* the name of a tree.  
 zungri (n), *n.* = zūnga.  
 zurana (m), *a.* boiling.

Fig. 1.

Section across west end of the Kimegar, at Holywood, Co. Down.

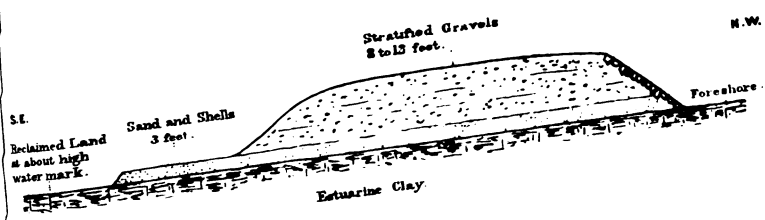


Fig. 2.

Section on the shore at Kilroot, Co. Antrim.

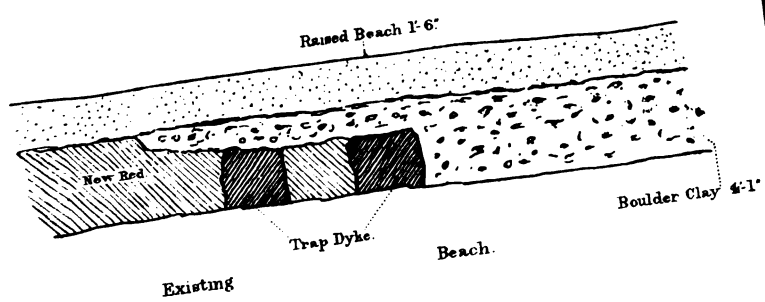
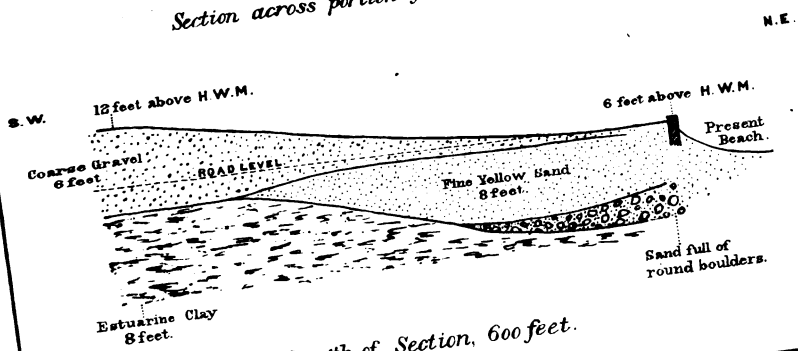


Fig. 3.

Section across portion of the Curran, Larne.



Length of Section, 600 feet.



Fig. 1.

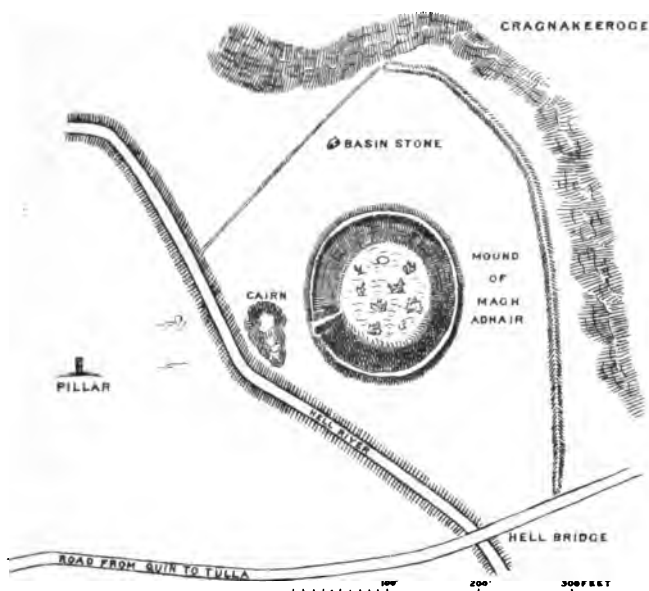
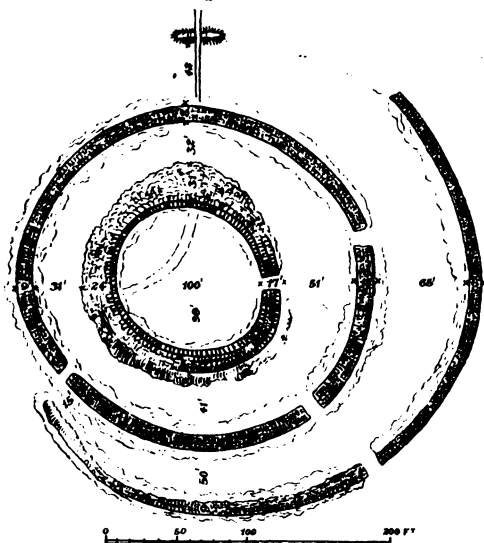


Fig. 2.

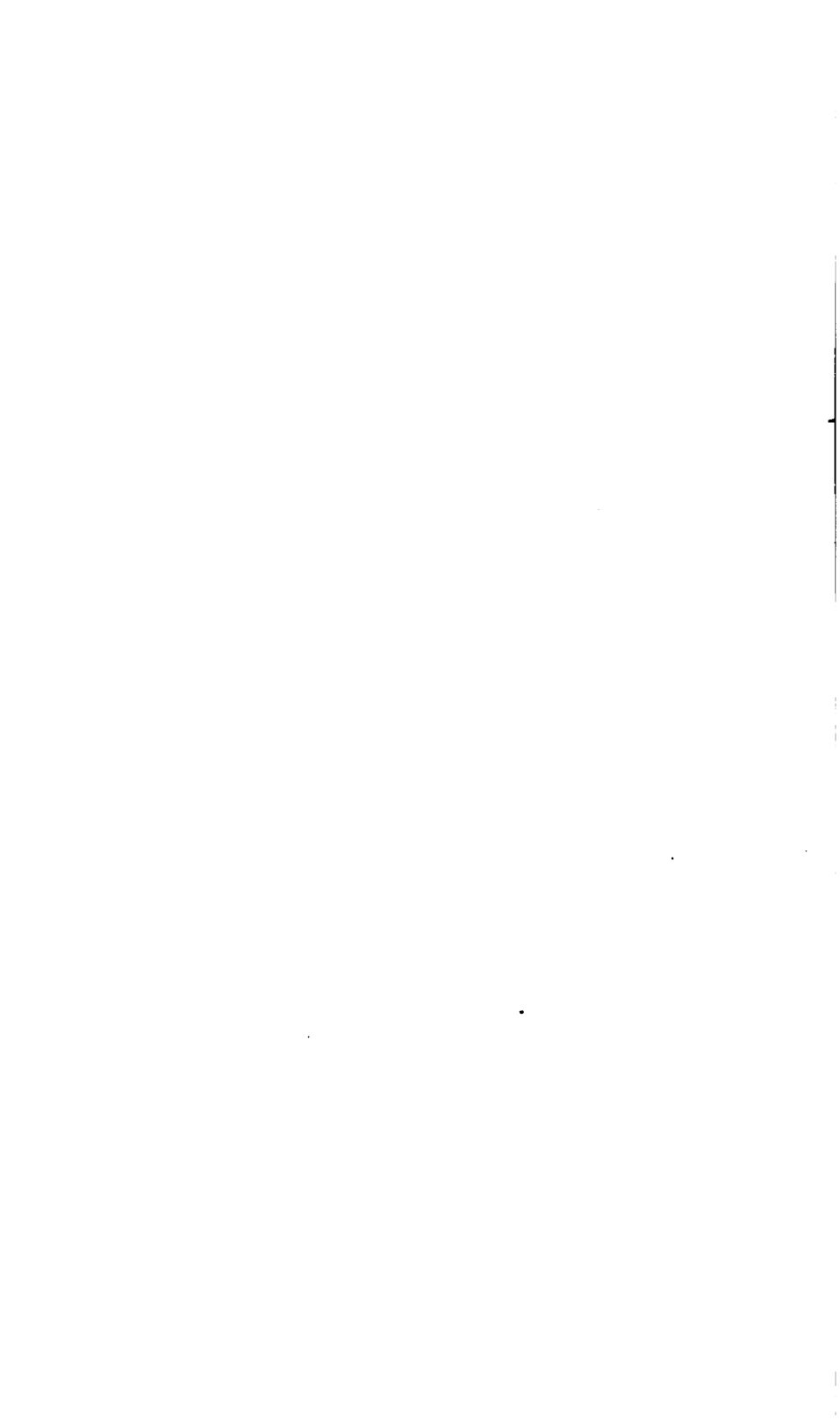


*Fort of Cahercalla Co. Clare.*













MONDAY, APRIL 8, 1895.

DR. J. K. INGRAM, S.F.T.C.D., President, in the Chair.

Mr. Charles J. Joly, M.A., F.T.C.D., signed the Roll, and was admitted a Member of the Academy.

Ramsay Colles and Hubert Thomas Knox were elected Members of the Academy.

Professor J. P. O'Reilly read a Paper "On the Orientation of certain Dolmens recently discovered in Catalonia."

Dr. R. F. Scharff read for the Fauna and Flora Committee of the Academy—Report I.—"On the Rotifera of County Mayo," by John Hood, F.R.M.S.

Donations to the Library were announced, and thanks were voted to the Donors.

Read the following letters from recently elected Honorary Members :—

" RIDGEWAY,

" KIMBOLTON-ROAD, BEDFORD,

" *March 26th*, 1895.

" DEAR SIR,

" I have to thank you for your letter of the 22nd, informing me of my election as an Honorary Member of the Royal Irish Academy. I shall be much obliged to you to convey to the Members, on the first opportunity, my warm appreciation of the honour conferred on me.

" Believe me,

" Yours faithfully,

" SAMUEL R. GARDINER."

“ RUSHMORE, SALISBURY,

“ *March 27th*, 1895.

“ SIR,

“ I have the honour of acknowledging the receipt of your letter of the 22nd inst. informing me that the Royal Irish Academy have paid me the compliment of electing me an Honorary Member in the section of polite literature and antiquities, and beg to thank you for the same.

“ I am glad to become an Honorary Member of your valuable Society, and hope, if my state of health permits of it, to be able at some time to be of use to it.

“ I remain, Sir,

“ Your obedient servant,

“ A. PITT RIVERS, Lt.-General.

“ E. P. WRIGHT, Esq.,

“ Sec. R.I.A.”

“ VIENNA, 31st *March*, 1895.

“ SIR,

“ I have had the honour to receive your letter dated March 22nd, and the Diploma as an Honorary Member of the Royal Irish Academy. Deeply touched by the high and hardly merited distinction which your illustrious Academy has bestowed on me, I beg leave to say the most respectful and cordial thanks to Mr. President and to every single Member of the Royal Irish Academy.

“ I beg you also, Sir, kindly to accept my thanks for your communication as well as the marks of highest esteem of your

“ Very obliged,

“ EDU. SUSS.

“ E. P. WRIGHT, Esq.,

“ Ir. Acad.”

MONDAY, APRIL 22, 1895.

DR. J. K. INGRAM, S.F.T.C.D., President, in the Chair.

Mr. G. H. Kinahan read a Paper on "Possible Land Connexions between Ireland and Great Britain."

Rev. T. Olden, M.A., read a Paper on "The Oratory of Gallerus."

Rev. E. Hogan, S.J., F.R.U.I., read his First Todd Memorial Lecture for the present Session on certain Texts from the Leabhar Breac.

Mr. Lavens M. Ewart presented to the Academy an early portrait of the late Right Rev. William Reeves, D.D., Lord Bishop of Down and Connor and Dromore, President of the Academy, 1891-2.

Resolved that a special vote of thanks be given to Mr. Lavens Ewart for this Donation.

Donations to the Library were announced, and thanks were voted to the Donors.

Read the following letter:—

"SÜDENDE BEI BERLIN—ANHALTER BAHN

"BAHN-STR. 21.

"16. April 1895.

"SEHR GEEHRTER HERR!

"Bei der Rückkehr von einer längeren Reise erfahre ich heute, dass mich die Royal Irish Academy zu ihrem Mitgliede ernannt hat.

"Ihre Körperschaft hat einst durch Hincks in die Entwicklung der Aegyptologie entscheidend eingegriffen und auch in neuerer Zeit wieder ist von Dublin aus sehr wichtiges für die Kenntniss des späteren Aegypten geleistet worden.

"Ich rechne es mir daher zur besonderen Ehre, Ihrem Kreise angehören zu dürfen und bitte Sie, der Academy meinen tiefgefühlten Dank aussprechen zu wollen.

"Hochachtungsvollst

"Ihr sehr ergebener

"AD. ERMAN.

"HERREN E. P. Wright,

"Secretär der R.I.A."

MONDAY, MAY 13, 1895.

DR. J. K. INGRAM, S.F.T.C.D., President, in the Chair.

MR. G. COFFEY, A.I.B., read a Paper on "A Double Cist Grave, and an Urn, and other Remains, recently discovered by Colonel Coddington, D.L., at Oldbridge, Drogheda."

DR. W. FRAZER read a Paper "On Vitrified Forts."

REV. E. HOGAN, S.J., read his Second Todd Memorial Lecture, Subject:—Irish Tales from the Leabhar Breac, "The Murder of Zachary."

Read the following letter:—

"PHYSIOLOGISCHES INSTITUT DER UNIVERSITÄT BERLIN.

"BERLIN, N.W., DOROTHEENSTRASSE 35.

"GESCHÄFTSZIMMER DES DIRECTORS,

"10th April, 1895.

"DEAR SIR,

"I have with the highest satisfaction received the news of my having been elected an Honorary Member of the Royal Irish Academy in the section of Science, and the accompanying Diploma of Membership. I feel extremely flattered at being thus deemed worthy of closer association with so many illustrious names in every department of science. May I ask you to transmit to the Academy the assurance of my most sincere gratitude for the honour they have bestowed upon me, and will you, dear Sir, in particular accept my best thanks for the part you have so kindly taken in the transaction.

"I am, dear Sir,

"Faithfully yours,

"E. DU BOIS-RAYMOND,

"Prof. of Physiology, Berlin University.

"Professor E. P. WRIGHT,

"Dublin."

Donations to the Library were announced, and thanks were voted to the Donors.

The Treasurer laid on the table the audited Accounts for 1894-5, and the Estimate for 1895-6.

The Secretary presented a copy of the List of National Monuments vested in the Commissioners of Public Works up to Easter, 1895.

MONDAY, MAY 27, 1895.

DR. J. K. INGRAM, S.F.T.C.D., President, in the Chair.

Mr. Ramsay Colles signed the Roll, and was admitted a Member of the Academy.

Prof. D. J. Cunningham, F.R.S., read a Paper on "Head Injuries inflicted by Stone Weapons, illustrated by Crania from the Haddon Collection."

The Secretary read for W. T. Calman, B.Sc., a Paper on "Species of Phoxocephalus and Apherusa. [Communicated by Prof. E. P. Wright, M.D.]

Rev. E. Hogan, S.J., read his Third Todd Memorial Lecture on certain Passages from the Leabhar Breac.

Donations to the Library were announced, and thanks were voted to the Donors.

The following Science Grants recommended by Council were confirmed :—

£45 to a Committee consisting of Dr. R. F. Scharff, Dr. E. J. McWeeney, Professor T. Johnson, Messrs. R. L. Praeger, R. M. Barrington, G. Pim, G. H. Carpenter, R. J. Ussher, F. W. Moore, D. McArdle, A. R. Nichols, and Professor E. P. Wright, to assist them in continuing their Researches into the Fauna and Flora of Ireland.

£20 to a Committee consisting of Rev. Dr. Haughton, Professor D. J. Cunningham, Professor A. C. Haddon, and Dr. C. R. Browne, to assist them in carrying on the work of the Anthropometrical Laboratory, and the Ethnographical Survey of the remote districts of Ireland.

£20 to Dr. J. T. Gilbert, to assist in the preparation of a Bibliography of the Works of Irish Authors, from the 15th to the 18th century, especially of many rare and valuable Works published on the Continent.

£10 to Mr. G. Coffey, to assist him in a Systematic Investigation of the Irish Sepulchral Urns.

£5 to Professor W. J. Sollas, and Mr. R. L. Praeger, to assist them in investigating the Glacial Deposits of Central Ireland.

The Treasurer read, in accordance with By-Law 3 of chapter III., the List of Members in arrears.



Read the following letter from Dr. Zeller :—

“STUTTGART, REINSBURGSTR. 56.

“29. März 1895.

“Die hohe Royal Irish Academy hat mir durch die Wahl zu Ihrem Ehrenmitglied, deren Urkunde mir gestern zugekommen ist, eine Auszeichnung erwiesen, für welche ich Derselben meinen tiefsten und verbindlichsten Dank ausspreche. Je weniger ich mich bei meinem vorgerückten Lebensalter der Hoffnung hingeben darf, der Wissenschaft noch weitere erhebliche Dienste leisten zu können, um so erfreulicher ist es mir, diejenigen, welche ich ihr bisher zu leisten versucht habe, von einer so angesehenen wissenschaftlichen Korporation so gütig und anerkennend gewürdigt zu sehen. Es gereicht mir zur hohen Ehre, mich fortan dieser Körperschaft zuzählen zu dürfen, und ich bitte Sie, mit meinem lebhaftesten Danke für Ihre Güte zugleich der ausgezeichneten Hochschätzung Ausdruck geben zu dürfen, mit welcher ich bin

“Einer hohen Academie,

“Verehrungsvoll ergebener,

“DR. E. ZELLER.”

The following was agreed to as an Address of welcome to His Excellency the Lord Lieutenant :—

To His Excellency, GEORGE HENRY, EARL CADOGAN, K.G., Lord Lieutenant-General and General Governor of Ireland.

MAY IT PLEASE YOUR EXCELLENCY,

We, the President and Members of the Royal Irish Academy, desire to offer to your Excellency our respectful congratulations on your appointment to the high office of Viceroy by Her Most Gracious Majesty the Queen.

More than one hundred years ago the Royal Irish Academy, founded by His Majesty George III. through the influence of the then Earl of Charlemont, received its Royal Charter for promoting the study of Science, Polite Literature, and Antiquities.

The record of our labours in these great departments will, we trust, show how earnestly we have sought to promote the study of each.

In the various branches of Science, the Academy may claim to have fully performed her part in the past, and is still actively engaged in the work of original research.

If Literature did not present so large a field for our endeavours, we are still able to point to important work recently done in the subjects of ancient Greek Papyri and Manuscripts of the Early Fathers as a proof that this portion of our duty is not neglected.

In our Museum of Irish Antiquities, now in part displayed in the New Museum of Science and Art, will be found a collection of great value as illustrating the past history and early civilization of this country.

By the publication of a series of Facsimiles of the old Irish Texts in our Library, we have placed the unique Manuscripts we possess within the reach of all scholars. In this latter expensive work we gratefully acknowledge the assistance given to us by Trinity College, Dublin. We have also superintended for Her Majesty's Treasury the publication of some of the ancient Annals of Ireland, and have taken a part in the investigation of the Ethnography of the people of our Western Isles.

Your Excellency by virtue of your office is Visitor of the Academy. We hope to have the opportunity of showing you our Collection of the Antiquities of Ireland—stone, iron, bronze, silver and gold, and we would further hope that you may be graciously pleased to visit our Library to inspect some of our old Irish Manuscripts and Books.

Signed on behalf of the Royal Irish Academy,

J. K. INGRAM, *President.*

E. P. WRIGHT, *Secretary.*

ROYAL IRISH ACADEMY HOUSE,  
DAWSON-STREET, DUBLIN.

It was resolved that the marked thanks of the Academy be given to W. G. D. Goff, Esq., of Glenville, Waterford, for his liberal offer to deposit for the present, in the Academy's Museum, the collection of Irish Gold Ornaments, now exhibited, on the condition that his name shall be attached to the deposit.

Donations to the Library were announced, and thanks were voted to the Donors.

SATURDAY, NOVEMBER 30, 1895.

(STATED MEETING.)

DR. J. K. INGRAM, S.F.T.C.D., President, in the Chair.

Mr. John Vinycomb and Mr. Francis J. Bigger signed the Roll, and were admitted Members of the Academy.

A ballot was opened for the election of a Member of Council. Deputy Surgeon-General King and Dr. Joyce were appointed Scrutineers.

Mr. Francis J. Bigger read a Paper on "Prehistoric Settlements at Portnafeadog, in the parish of Moyrus, Connemara."

Mr. F. J. Bigger also exhibited some photographs of early Christian antiquities at Inishmacdarragh, off Roundstone, not apparently hitherto exhibited.

Donations to the Library were announced, and thanks voted to the Donors.

On the report of the Scrutineers the President declared the Earl of Rosse, K.P., F.R.S., elected a member of Council on the Committee of Science.

The President, under his hand and seal, nominated the Earl of Rosse a Vice-President of the Academy.

The following recommendation from Council was adopted:—

"The Council recommend the Academy to lend their Mace (properly insured) to the Arts and Crafts Exhibition, subject to having it returned to the Academy at such times as it shall be demanded by the Treasurer."

MONDAY, DECEMBER 9, 1895.

DR. J. K. INGRAM, S.F.T.C.D., President, in the Chair.

Francis Elrington Ball and Rev. William Spotswood Green, M.A., were elected Members of the Academy.

Mr. Charles J. Joly, M.A., F.T.C.D., read a Paper on "The System of Scalar Invariants of two Linear Vector Functions."

By permission of the Academy, Mr. A. Vaughan Jennings, F.L.S., read a Paper on "Two new species of *Phycopeltis* from New Zealand."

Part 17 of *Transactions*, vol. xxx., "On the Cytology of the

Vegetative and Reproductive Organs of the Saprolegniææ," by Marcus Hartog, M.A., D.Sc., Professor of Natural History, Queen's College, Cork, was laid on the table.

The President mentioned that he had, in company with many of the Members of the Academy, presented to His Excellency the Lord Lieutenant the Address voted by the Academy, and that His Excellency was pleased to give the following reply :—

MR. PRESIDENT AND GENTLEMEN,

I thank you very heartily for your congratulations on my appointment to the high office of representative of her Most Gracious Majesty the Queen in Ireland. The record of the labours of the Royal Irish Academy in the various branches of science, polite literature, and archæology to which you allude is known and appreciated, and the conspicuous success which the Royal Irish Academy has achieved merits recognition. Your researches in the subjects of ancient Greek papyri and manuscripts of the Early Fathers have been most beneficial, and your publication of *fac-similes* of old Irish texts and manuscripts has brought them within the reach of scholars, and has fostered and developed our knowledge of the early literature and annals of Ireland. I am proud of the office of Visitor of the Academy, which I hold by virtue of my position as Viceroy of Ireland, and I am gratified by the expression of your wish that I should visit your collection of Irish antiquities and your valuable library of old Irish manuscripts and books.

It was moved by Master Pigot, seconded by Judge Kane, and resolved :—

"That the attention of the Council be called to the importance of having the notice relating to Treasure Trove forwarded to the various Constabulary Barracks and National Schools in Ireland, as formerly."

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MONDAY, JANUARY 13, 1896.

DR. J. K. INGRAM, S.F.T.C.D., President, in the Chair.

Mr. Francis Elrington Ball signed the Roll, and was admitted a Member of the Academy.

Rev. Hugh O'Reilly was elected a Member of the Academy.

By permission of the Academy, Mr. E. E. Fournier d'Albe, B.Sc., read a Paper on "The Identity of Energy." [Communicated by Prof. J. P. O'Reilly, C.E.]

By permission of the Academy, Mr. H. Dixon, B.A., read a Paper on "Rôle of Osmosis in Transpiration in Plants." [Communicated by Prof. E. P. Wright, M.D.]

Donations to the Library were announced, and thanks were voted to the Donors.

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MONDAY, JANUARY 27, 1896.

DR. J. K. INGRAM, S.F.T.C.D., President, in the Chair.

Mr. R. Lloyd Praeger, B.E., read a "Report on the Raised Beaches of the North-East of Ireland."

Donations to the Library were announced, and thanks were voted to the Donors.

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MONDAY, FEBRUARY 10, 1896.

DR. J. K. INGRAM, S.F.T.C.D., President, in the Chair.

Rev. William Spotswood Green, M.A., signed the Roll, and was admitted a Member of the Academy.

Mr. Caesar Litton Falkiner, M.A., and Lieut.-Colonel George T. Plunkett, Royal Engineers, retired, were elected Members of the Academy.

Rev. T. Olden, M.A., read a Paper on "The Paten of Gourdon, illustrated from the Book of Armagh."

Dr. W. Frazer read a Paper on "Chambered Tumuli, and their Construction," and also exhibited some remains of a wooden house recently discovered by Mr. Thomas Drew, R.H.A., at St. Michael's Hill, Dublin, on the site of the old hazel forest and bog.

The President received from the Subscribers, on behalf of the Academy, an Oil Portrait (by Miss Purser) of the late Sir Robert Kane, LL.D., F.R.S., President of the Academy (1877-82).

MONDAY, FEBRUARY 24, 1896.

DR. J. K. INGRAM, S.F.T.C.D., President, in the Chair.

His Excellency the Lord Lieutenant, Earl Cadogan, K.G., Visitor of the Academy, having arrived,

The President delivered the following Address :—

It was formerly the practice of the Council of the Academy to award, from time to time, medals on the Cunningham foundation to the authors of papers in our "Transactions," and occasionally even of independent publications, which were considered to possess eminent merit. An arrangement was afterwards made by which the available fund is usually devoted to the printing and the often costly illustration of certain selected papers, of such excellence that, under the previous system, medals would fitly have been awarded to them. These are published as "Cunningham Memoirs." This change in our mode of honouring some of our most valued contributors does not, I am advised, discharge me of the duty which the President performed in bestowing the medals—that, namely, of explaining in a general way the objects of the several memoirs, the mode of treatment followed in them, and the principal results arrived at. I am not at all disposed to evade this obligation ; far otherwise : it is a pride and pleasure to me to dwell thus on some of the best intellectual products of the Academy. Accordingly I now proceed<sup>1</sup> to speak of three of what may be called our *Mémoires Couronnés*, which have been either read, or distributed to our members, during the period of my Presidency.

I.

The first of these is the Memoir by Professor Cunningham, entitled, "Contributions to the Surface Anatomy of the Cerebral Hemispheres."

Though the study of the brain—rather, however, from the physiological (or functional) than the anatomical side—has always had a special fascination for me, I am, of course, incompetent to

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<sup>1</sup> Part of the following Address had to be omitted in the delivery, in consequence of the limitation of time.

pronounce an independent judgment on any disputed point respecting it. If I venture to indicate the range of Dr. Cunningham's researches and some of the most important conclusions at which he has arrived, it is because the excellence of his method and the luminous nature of his exposition have made it possible for me to follow him, where with a less able guide I should have failed to make my way.

As Dr. Cunningham says at the outset, "the descriptive anatomy of the adult human cerebrum is now very nearly complete," and "what still remains to be done is the establishment of our knowledge on a proper morphological basis." Now the higher research to which he thus points embraces two studies—first, that of the development of the surface of the human cerebrum from the early embryonic stages up to mature life; and, secondly, the comparison of the human cerebrum both in its constituent parts and in their gradual modifications with the simian cerebrum, especially in the anthropoids; in other words, the study of evolution and of anatomical comparison—or, as they are now sometimes called, ontogenetic and phylogenetic research. Neither of these studies, of course, is new; but to both, Dr. Cunningham has made large contributions. Taking some of the most important cerebral fissures, first those which are temporary, and afterwards, in succession, the Sylvian, the Rolandic, the intraparietal, and those of the frontal lobes, he examines the history of their formation, and, as illustrated thereby, the growth of particular areas of cortex; and then the change of position on the surface which those fissures, or some of them, undergo after they have been once laid down.

The special features of his mode of investigation are these:—1, the brain is hardened *in situ*, instead of being first removed from the cranial cavity; and 2, the measurements he makes on the surface are not absolute, but relative to the mesial length of the hemisphere, and he is thus enabled to fix corresponding points in brains of different sizes and at different stages of growth.

In man, except in abnormal cases, the complete fissures on the outer faces of the hemisphere have, in general, only a temporary existence during an early period of development; as the cerebral growth proceeds, they are obliterated, and leave the surface again smooth. Some of the complete fissures on the mesial face of the hemispheres are retained, in whole or part, in the adult cerebrum; there is much interesting matter in the Memoir relating to these, on which, however,

I cannot dwell. The transitory fissures result from deep infoldings of the thin cerebral wall. The influence at work in their production appears to be purely mechanical—a restraint placed on the longitudinal growth of the hemispheres. Most anatomists have regarded the occipital lobe as a secondary formation—a local out-growth from the hinder part of the hemisphere, the early condition of the brain presenting only the frontal, temporal, and parietal lobes. From this view Dr. Cunningham dissents. He holds the occipital lobe to be an original formation which arises from the general growth of the brain, and whose shape is determined by the restricted space it has to occupy above the cerebellum. Now, the appearance and the obliteration of the transitory fissures seem to be closely related to the mapping-out of the occipital lobe. Those fissures are due to a difference between the rate of growth of the hemisphere wall and the skull capsule containing it. The development is initiated in the brain, and the changes involved in it are resisted by the enclosing cranium. When the primate brain is in the quadruped stage, there is an effort towards the formation of a distinct occipital lobe; but there is a pause in the growth of the cranium, and hence a temporary pressure which gives rise to infoldings of the cerebral wall. (It would seem to follow that, as Benedikt of Vienna has asserted, not only in the primates, but in the mammalia generally, there is an occipital lobe; this, however, cannot yet be stated with certainty.) As the lobe is formed, the foldings disappear, part of the agency in their obliteration being, however, most probably, in addition to the extension of the surface, the absorption of the folds. The transitory fissures have, with two exceptions, disappeared when the corpus callosum is fully formed, and its development may possibly have something to do with their disappearance.

Dr. Cunningham next proceeds to the study of the fissure of Sylvius, that important sulcus which separates the frontal and parietal lobes above from the temporo-sphenoidal lobe below, and which, with the exception of the great longitudinal, is the most conspicuous sulcus in the brain. It is sometimes, but wrongly, described as a complete fissure; the projection into the cavity of the hemisphere corresponding to it, is not the result of a folding in of the mantle wall, but is an elevation of the floor of the prosencephalon. The three limbs usually recognised as composing the fissure, namely, the anterior ascending, the anterior horizon-



tal, and the posterior horizontal, are formed by the meeting of the contiguous lips of the four opercula—the temporal, the fronto-parietal, the frontal, and the orbital. Sometimes the two anterior limbs are fused into one by the absence of a frontal operculum; sometimes they have a common stem and assume a Y-shape; this occurs when the apex of the frontal operculum or pars triangularis does not meet the temporal operculum. In consequence of a growth-antagonism between the fronto-parietal and temporal opercula, the posterior limb of the Sylvian fissure descends on the outer surface of the hemisphere up to the ninth year of life. Under the opercula lies the island of Reil. There is a close correspondence, which is plainest in the foetal cerebrum, between the furrows and the convolutions on the insula and those on the outer surface of the hemisphere. It has three radial furrows similar in position to, and contemporaneous in origin, respectively, with three fissures of which I shall presently speak, namely, the Rolandic, the inferior præcentral sulcus, and the vertical portion of the intra-parietal sulcus. It is a curious fact that in the development of the sulci and gyri, the right insula is usually in advance of the left. Before birth the anterior end of the island is very nearly fixed in relation to the anterior end of the cerebrum, while the posterior end moves rapidly towards the occipital pole. After birth the posterior end remains fixed, while there is an oscillation in the position of the anterior end, which at first approaches, and afterwards moves back from, the anterior end of the cerebrum.

Very interesting are the results arrived at by a comparison of the fissures in the two sexes, and in the human and primate brain. Rüdinger asserted that all the convolutions of the cerebrum in the female foetus are backward in their growth as compared with those in the brain of the male foetus. Dr. Cunningham has not been able to satisfy himself of this; but, so far as relates to the insula, he recognises it as true. In male adults, the antero-posterior length of the island is relatively greater than in the female. The gyri and sulci on its surface are very poorly developed in the anthropoids, the orang being nearest to man in this respect. There is no frontal or orbital operculum in those apes. This constitutes one of the most striking differences which exist between the convolutionary arrangement of the ape and that of man. The submerged portion of the insula in the ape corresponds in reality with little more than the posterior two-thirds of the insula in

man. The anterior part of the insula in the ape is on the surface exposed to view and uncovered by opercula. When we compare the insula in man with the submerged portion in the apes, the latter is found to be much smaller in proportion. In the lower apes, the insula is very narrow, while the longer axis is greater relatively than in the anthropoids. In the human female, as well as in the anthropoids, the point at which the trunk of the Sylvian fissure appears on the outer surface of the hemisphere is slightly further back than in the male, and this is a retention of the infantile character. The left hemisphere has an average length slightly greater than that of the right. But the Sylvian fissure is considerably longer in the left hemisphere; and this is true of all periods of growth, and attains its full accentuation in the adult brain. There is apparently no appreciable difference in the length of the fissure in the two sexes, though the contrary has been asserted; in the ape the fissure is relatively longer than in man. What is called the Sylvian angle is wider, both in the apes and in man, on the left side than on the right; and this constitutes at every stage of growth a marked difference between the hemispheres.

Dr. Cunningham next passes to the fissure of Rolando, which, if it were named after him who first described it, ought rather to be called the fissure of Vicq-d'Azyr. It would best be called the "central" fissure, if that epithet be interpreted as indicating its approximate equidistance from the frontal and occipital poles of the hemisphere. One of the most remarkable points brought out by Dr. Cunningham in relation to the Rolandic fissure in man is the stability of its position on the surface at all stages of growth. It is usually formed in two portions, a lower and an upper, which appear independently, and afterwards unite.<sup>1</sup> In the lower apes a continuous, not an interrupted form of development seems to obtain.

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<sup>1</sup> Since this Address was written, Dr. Cunningham has sent me the following interesting note in relation to what I have said on the formation of this fissure:—  
"The development of the fissure in two parts is very significant. The development of a fissure is brought about by an intensity of growth of the surface on either side of it; the surface grows up in the form of two bounding banks. This intensity of surface-growth is, of course, associated with the development of function in the area affected. The district immediately in front of, and behind the fissure of Rolando, is occupied by the motor centres of the lower limbs, upper limbs, and face in that order from above downwards. The appearance of the fissure in two parts probably means the separate appearance of the arm and leg

Dr. Cunningham dissents from several of his predecessors as to a sexual difference in the position of the fissure of Rolando, which they regarded as indicating a greater relative mass of brain-matter in the frontal lobe in the male than in the female. This difference Dr. Cunningham has not observed; if there be any, he thinks it is in favour of the female frontal lobe. In the Rolandic angle, too, in which the apes differ from man, some writers find a sexual human difference, which Dr. Cunningham, as well as Eberstaller, denies. The only variation he recognises is that in brachycephalic heads the angle opens out, and in dolicocephalic heads becomes more acute. The length of the Rolandic fissure is substantially the same in the two sexes, but is much greater in the anthropoids than in man. Curiously, in the chimpanzee and orang the upper end of the Rolandic fissure is further back than in man, which indicates a greater relative antero-posterior length of the upper part of the frontal lobe in the anthropoids; but the lower part is much shorter than in man. In the lower apes of the old world the fissure of Rolando is, throughout its course further forward than in the human hemisphere.

Coming now to the intraparietal furrow of Turner, Dr. Cunningham observes that it is rather a system of sulci than a single sulcus. It consists of three portions: the sulcus postcentralis, divided into a superior and an inferior portion; the ramus horizontalis, and the ramus occipitalis. As to the process of its evolution and the typical arrangement of its parts, there has been considerable difference of opinion among anatomists. From a study of the brain in the foetal condition and in the apes, Dr. Cunningham arrives at the conclusion that the ramus horizontalis and the inferior sulcus postcentralis are originally continuous, whilst the superior sulcus is a superadded element. In the human brain is found every possible form of combination of the segments of the sulcus distinct from the ramus occipitalis; but there is a general tendency towards a union of the two originally separate postcentral elements of the sulcus, and a divorce from the lower of these of the ramus horizontalis. The intraparietal

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centres. The lower part associated with the arm centres appears first, because the upper limbs in their development are always in advance of the lower limbs. In the embryo the buds which constitute the earliest form of the upper limbs have been pushed out before the corresponding hinder limb buds have made their appearance."

sulcus appears later than the fissure of Rolando on the human foetal cerebrum, but curiously the opposite is the case in the simian brain, indicating that of the two fissures the intraparietal possesses the greater phylogenetic antiquity. Dr. Cunningham thinks that, by studying the arrangement of its different parts in different ethnic brains, we may be able to point to racial distinctions indicated by the varieties. There is another segment of the intraparietal sulcus which Ecker described under the title of sulcus occipitalis transversus. This is not, as has been supposed, the homologue of the Affenspalte in the apes, which, as Dr. Cunningham elsewhere shows, is really homologous with the transitory external perpendicular fissure in man.

In proceeding to study, lastly, the sulci on the external surface of the frontal lobe, we are struck by a remarkable analogy between the præcentral and the intraparietal sulci. The præcentral sulcus has two portions corresponding to those of the postcentral; the former, however, unlike the latter, generally remain separate from each other. There are also, in the frontal lobe, furrows which correspond respectively to the ramus horizontalis and the ramus occipitalis of the parietal lobe, and a terminal bifurcation of the second of these frontal furrows, corresponding to the sulcus occipitalis transversus. But, according to Dr. Cunningham, the morphological relations of these rami in the parietal lobe are quite different from those of the furrows in the frontal lobe which resemble them in form and position. The parietal rami are simultaneously developed, and in the lower primates they are continuous, whilst the two corresponding frontal sulci appear, in general, at different times, and one of them is entirely absent in the lower apes. His view is thus altogether different from that of Eberstaller, from whom he also dissents as to the parallelism of the relation between the first frontal furrow and the sulcus præcentralis superior with that between the second frontal furrow and the sulcus præcentralis inferior, which two latter sulci he regards as morphologically distinct fissural elements, whilst the former two are closely connected, if not to be completely identified.

On no part of the cerebral surface are the character and mode of development of the sulci so variable as on the frontal lobe. These varieties Dr. Cunningham studies with minute care, and estimates numerically the frequency of the different forms in the brains he has

examined. Into those elaborate details I do not enter; but the general conclusion at which he arrives is of great importance—it is that the several sulci appear, on the average, in the following order—first, the sulcus præcentralis inferior and the second frontal furrow; then the lower portion of the sulcus præcentralis superior, with the basal part of the first frontal furrow; and afterwards, in succession, the anterior part of this last with the upper part of the sulcus præcentralis superior; next the sulcus frontalis medius; and lastly the sulcus frontalis mesialis. It would be natural to suppose that this order represents the relative degrees in which those sulci are stamped on the structure of the primate brain generally; but, in order to ascertain this, the question of the homologues of these several furrows in the simian cerebrum must first be determined. Dr. Cunningham goes into a most careful study of the sulci in the ape cerebrum from *Cebus* up to the anthropoids, and, differing from some of his most eminent predecessors, he arrives at the following conclusions.

The sulcus frontalis inferior in man, he holds (with Gratiolet), corresponds in the apes with what Mingazzini has called the sulcus rectus, which already appears in *Cebus*. The sulcus præcentralis inferior corresponds to the sulcus arcuatus which is well seen in *Callithrix*. The sulcus frontalis primus is of comparatively late origin, and is absent in some of the lower apes; when it appears, it is represented by certain shallow furrows which lie between the horizontal part of the sulcus arcuatus and the mesial border of the hemisphere. The hindermost of these, Dr. Cunningham thinks (so far agreeing with Eberstaller), may be a sulcus præcentralis superior. Lastly, the sulcus frontalis mesialis, which, in man, divides the superior frontal convolution into two, does not appear in the simian cerebrum at all, and is less strongly marked in the lower than in the higher human races. Thus the ontogenetic and phylogenetic evidences agree in fixing the order of importance of these frontal furrows.

Another alleged homology is discussed by Dr. Cunningham. The sulcus fronto-orbitalis has been regarded as representing in the anthropoids the anterior limb of the fissure of Sylvius. This he shows to be an error, arising from neglect of the fact, already mentioned, that there is no frontal and no orbital operculum in the anthropoids, a portion of the insula in them being exposed on the surface which in man is submerged. There is no anterior Sylvian limb in the

anthropoids; the fronto-orbital sulcus is really homologous to the anterior limiting sulcus of the insula in the human brain.

This closes my imperfect summary of Dr. Cunningham's investigations. The Memoir appears to me to show everywhere the hand of a master. It exhibits, in addition to patient and laborious research, and extraordinary learning in the history of cerebral study, such originality, penetration, and breadth of view as, in my opinion, stamp it as one of the most important scientific Papers ever contributed to our Transactions.

There is added to Dr. Cunningham's Memoir a chapter by Mr. Victor Horsley. Its object is to determine, as accurately as possible, the local relations of the chief fissures and gyri in the brain to different portions of the enveloping cranium, regard being had to variations arising from the size of the head, from age, sex, and pressure distortion. The author insists on the importance of using Dr. Cunningham's mode of preparing the cerebrum for study, and on the necessity of the measurements taken being not absolute, but relative to a general index. He proceeds to examine from his point of view the topography of the cerebrum as a whole, that of the fissures which separate lobes, that of those which sub-divide lobes, and, finally, that of the island of Reil. Throughout he recognises the great advance in our knowledge of the brain due to the labours of Dr. Cunningham, from none of whose conclusions do I find him dissenting. It would be impossible for me in the present address—even if I were competent for the task, to give an abridged view of the great body of details into which he necessarily enters. I will only say that I have been much impressed by the evidences to be found in his contribution to the Memoir, of the great ability, the extensive learning, and the thorough command of his subject, which, from his high reputation, it would be natural to expect.

## II.

The next Memoir of which I have to speak is that of Dr. Mahaffy on the Flinders Petrie Papyri. In passing from Cerebral Anatomy to the Literæ Humaniores, I feel myself to some extent on firmer ground. But, though I was led in past years, as Librarian of Trinity College, to pay attention to some branches of Palæography, I

am not at all a specialist in that subject, particularly as regards writings on Papyrus ; and in giving an account of Dr. Mahaffy's labours, I can only bring to bear the general knowledge and habit of mind which may be expected in an ex-Professor of Greek, and which may be regarded as qualifying him for judging of the results of work which he does not wish to imply that he could himself have performed.

Let me briefly recall to you the circumstances in which the investigation was undertaken. Mr. Flinders Petrie, well known as an Egyptologist and explorer, discovered in the desert not far from Gurob in the Fayyûm, a cemetery partly of the Ptolemaic period. Many of the mummy-cases in the tombs of this cemetery were made of layers of papyrus, which had been cut or torn into small pieces and glued together so as to form a thick carton. Mr. Petrie saw that the pieces of papyrus were fragments of discarded documents, most of them in Greek. To separate and cleanse them was a difficult, often an impossible, task. Many were stained or worm-eaten so as to be illegible, and a layer of chalk or lime laid over the papyri as a ground for colouring had, in most cases, destroyed the ink. Mr. Petrie brought home a large number of texts which he placed, in 1890, in the hands of Dr. Mahaffy and Mr. Sayce for examination and decipherment, if this should be found possible. Those scholars, working under great difficulties, separated and sorted many of the fragments, and laboured, not without success, on their interpretation. These form the subject of the first part of the Memoir. Afterwards, on his departure to Egypt in November of the same year, Mr. Petrie left with Dr. Mahaffy a store of unseparated fragments, which are printed and discussed in the second part of the Memoir, dated 1893. In dealing with the documents, Dr. Mahaffy liberally acknowledges such help as he received from his colleagues in Trinity College ; but these gentlemen would be the first to recognise that the work was essentially his own.

Let me notice the several elements which composed this remarkable find. When such a discovery is made, we of course ask, first, whether it offers to us any literary compositions preserved in whole or part ; and the recovery in recent years of several orations of Hypereides, of the Aristotelian *Πολιτεία τῶν Ἀθηναίων*, and of the poems of Herondas has awakened keen anticipation of similar successes to follow. It soon appeared that among the Gurob papyri there were several containing matter of this kind. There was, in the first place,

a considerable portion of the *Antiope* of Euripides—a play of which we had previously only some lines preserved through ancient quotations. There were long passages from the *Phædo* and the *Laches* of Plato. There was also an imperfect fragment which was recognised as coming from the XIth Book of the *Iliad*, differing in several particulars from the received text: a few verses, probably from Hesiod, and some very brief extracts from Epicharmus and Euripides, bearing the names of those writers. There were, besides, one or two partially defaced dramatic and elegiac pieces, a prose discourse on good fellowship, and other scraps—one apparently describing the funeral customs of different nations—all these by unknown authors.

It is, perhaps, natural to estimate at first too highly ancient fragments thus saved from the wreck of so much of the literature of the Greeks. But it must be the impulse of anyone possessed with the true spirit of a scholar, when such relics come into his hands, without too nicely considering their value, to try to ascertain their meaning and trace their origin. This Dr. Mahaffy has done with conscientious diligence, and has effected much towards their correct editing and their elucidation, though, from the mutilated state of many of the fragments, not all that he desired.

These classical remains do not, in my opinion, with one exception—that, namely, of the *Antiope*—contribute anything important to our knowledge of the ancient texts. We were aware that there were discrepancies in the early copies of Homer, as is shown, for example, by Aristotle's quotation in his *Politics* of the words *παρ γὰρ ἐμοὶ θάνατος*, which are not in our MSS. But I think there are internal indications that the passage from Homer in the papyri, which must have been a favourite one with physicians, is either incorrectly quoted from memory, or more probably is a transcription, in which the copyist has interpolated verses of his own. I certainly cannot regard it as affording evidence of a distinct textual tradition.<sup>1</sup> As to the passages of Plato, they are consolatory as showing us how little the text of the

<sup>1</sup> Observe *ελοιεν* and *ελοιντο* at the ends of consecutive lines, which would be impossible, and *νοησεν* in the line after 504, where it is plainly out of place. The corresponding line of the second column would also have ended with *ενοησεν*, and, therefore, if a copyist had the two columns before him, parablepsy would explain the error. If some scholar would reconstruct the passage according to the indications of the papyrus, we should see whether it could be made to wear a genuinely Homeric aspect in its new form.



third century B.C. differed from that of the more recent MSS. As Dr. Mahaffy remarks, only in one case do the papyri confirm the conjectural emendation (τοῦ for τῷ) of a modern critic; and the one different reading which strikes us as forcible, and which might conceivably have emanated from *curae secundae* of Plato himself, is ἀνδραποδώδη for εὐήθη in the *Phædo* as an epithet of the vulgar sort of courage.<sup>1</sup> But, apart from the interest of having before our eyes portions of Plato's works, transcribed probably within a hundred years of his death, these and the other classical fragments have, as we shall see, a real and great value when regarded from another point of view.

Before passing from the literary remains, I must not omit to specify one of them, the treatment of which required and elicited the exercise of Dr. Mahaffy's sagacity as well as his wide acquaintance with all that bears on the history of Greek literature. This was a passage which, at first sight, looked as if it was a portion of the well-known tract of the *Contest of Homer and Hesiod*. The tract mentions the Emperor Hadrian, and on this might have been founded an argument to show that some of the papyri were of much later origin than that which had been assigned to them. But Dr. Mahaffy was enabled, using researches of certain recent Continental critics, to show that the tract in question was only a *rifacimento*, but little altered, of a much older treatise, written, most probably, by Alkidamas in the fifth century B.C., and which is doubtless the source of the passage in the papyri.

Next after literary relics, we are prompted to inquire as to materials for elucidating the general history of the times of the early Ptolemies, to which, as we shall see, these documents are unquestionably to be referred. Such information would be welcome, for our regular sources for the period are more than commonly scanty; indeed, in dealing with its events, as Dr. Mahaffy says in his *Empire of the Ptolemies*, "we stumble about in darkness and uncertainty." Now, there is one document which gives some account of contemporary public transactions. It is almost certainly, as Dr. Mahaffy has seen, a letter written during the war waged by Ptolemy III. (Euergetes) against the Syrian King, Seleucus Kallinikos, to avenge the murder

<sup>1</sup> But it is improbable that the epithet ἀνδρ. should have been used in 68 E and introduced again in 69 B. I believe εὐήθη to be the right reading in the former place.

of his sister, just before the great expedition, if we should not rather, with Heeren, call it the great "foray," which was recorded on the marble of Adule. The letter is sent home by some one serving in the campaign, and describes the capture of a town in Cilicia, and the subsequent entry of the Egyptian troops, first into Seleukeia, on the Orontes, and afterwards into Antioch. There are in the letter some sentences which it is not easy to understand; two different cities—Seleukeia—seem to be mentioned without any distinctive addition to either name, and there is reference to an Epigenes, who, if he be the same who appears in Polybius as an officer of Seleucus Keraunos and of Antiochus the Great, ought to have been on the Syrian side, while he seems to have been on the Egyptian. But, on the whole, there can, I think, be no doubt that Dr. Mahaffy has quite correctly interpreted the passage, which accordingly, in his later historical volume, he has been able to use as contributing, in some small degree, to our knowledge of the reign of Euergetes.

Lastly, in Mr. Petrie's find, comes a very numerous body of more or less fragmentary documents relating to private or official business—wills, contracts, leases, receipts, taxing accounts, complaints addressed to the authorities, official correspondence, family letters, and the like. These papers have to do with the everyday affairs of the Macedonian and other members of a military colony which had been settled by Ptolemy Philadelphus in the Arsinoite nome on land probably reclaimed from Lake Moeris. We really know nothing, whatever may be conjectured, as to the exact circumstances and influences which led to the formation of this settlement. But, looking through Dr. Mahaffy's eyes, and studying with him these business documents, we do really gain a considerable insight into the life of the colonists, the transactions which went on among them, and their relations to the public authorities. It may be supposed to diminish the value of this information that it relates only to a peculiar and specially situated part of the population of Egypt; but I think that we may safely generalise, at least as to the conduct of the administration, from the methods pursued here to those followed in dealing with the whole Egyptian people. The ideas we gather from these papyri quite fall in with the impressions we obtain from the Revenue Laws of Philadelphus, since discovered, as to the bureaucratic government and fiscal system of the country at large.

There is a point affecting these Gurob documents which remains unexplained—When, and how, did they become available as waste paper for the purpose of the coffin-makers? Dr. Mahaffy has a theory to account for this; indeed, his ingenuity in devising explanations of every difficulty which arises is inexhaustible; and I confess that in reading, not this memoir only, but his other writings also, I find myself assuming a sceptical attitude by way of safeguard against the temptation to accept, as representing historical facts, his plausible hypotheses and subtle combinations. It is just, however, to add that he himself often regards them as merely tentative and provisional. Remarking, in his commentary on the papyri, that all these documents belong to the times of the Second and Third Ptolemies, he supposes that this was due to the disturbance which broke out in the later years of Ptolemy IV. He conjectures that the settlers lost their lands in the general confusion of the insurrection, which he represents as having been protracted and obstinate, and renewed again upon the accession of Epiphanes. I do not so understand Polybius; and Dr. Mahaffy, in his *Empire of the Ptolemies*, seems to have altered his view of the matter. The revolt was, according to Polybius, marked by mutual cruelty and treachery, but not by any pitched battle or siege or anything worthy of narration. It was a peasant revolt, as Dr. Mahaffy now sees, which never seriously shook the State, and could not have permanently dispossessed the military colonists. No mere revolt—nothing short of a successful revolution—could have had such an effect. The disturbances at the beginning of the reign of Epiphanes were a popular rising in Alexandria, not against the royal house, but in its vindication and defence against Agathocles and his sister. And, in fact, there are amongst the Petrie documents several of the reign of Epiphanes, so that the local legal registers continued to be maintained.

Now, if there is really no reason for believing in a “catastrophe” which dispossessed the military grantees, to what conclusion are we led? The wills, contracts, and other documents found here were no doubt cleared out of official shelves or lockers, possibly at one time; and, if they had been chronologically arranged, those of a single period would naturally enough be used by one set of coffin-makers. But is it conceivable that the copies of wills in a public registry office (to speak of no other documents) should have been treated as waste paper until a very long period had elapsed since they were recorded,

especially considering how sharply the bureaucracy looked after taxation, which is necessarily associated with property? And is it not possible that at that late date other materials, not of the same nature—for example, some literary papers—may have got mixed with business documents of the time of the Second and Third Ptolemies? I do not assert that this happened at Gurob; only that it is not a conclusive argument that, because classical texts are found mixed with the official papers, they cannot be younger than 220 B.C. The antiquity of any piece must, in the absence of a date, be judged by the character of the writing.

This brings me to what I consider the greatest value which attaches to Mr Petrie's discovery—I mean its bearing on Palæography. To see what an important contribution it has made to our knowledge in this branch of study, it is only necessary to look into the excellent little book on Greek and Latin Palæography recently published by the principal Librarian of the British Museum. We have, in this Gurob find, a large body of *dated* documents of the third century B.C. There are wills of the years 237, 235, and 224 B.C.; the oldest fragment—merely a scrap of text—belongs to 268 before our era. There are in the libraries of the world only a few Greek Papyri of equal antiquity, such as the Imprecation of Artemisia at Vienna; so that this find gives us almost the entire representation which we possess of the earliest stage of Greek writing other than sculptured inscriptions. It is, indeed, the study of the specimens handled by Dr. Mahaffy, that has led to the acknowledgment of the great, though not equal, antiquity of some papyri in the several European collections, which had been formerly assigned to later periods. We find in these Gurob remains, as elsewhere, two different kinds of writing. There is, first, the formal literary hand, ordinarily used by professional scribes in preparing books for the market, though sometimes employed for ordinary uses; and, secondly, the cursive hand, generally applied to every-day purposes, but occasionally used for literary ends by scholars or other persons not writing for the book trade. Of the former, the fragment of the *Phædo* of Plato is a beautiful example, and that of the *Antiope* one nearly, though not quite, as good; and the character of the letters used in them is believed, by the best judges, to prove their early Ptolemaic origin. Of the second kind of writing the business documents afford abundant specimens. Now, on a

general survey of these materials, one broad general conclusion forces itself upon us—namely this—the hand-writings, whether the literary or the less formal, show so much facility, boldness, and variety that plainly the practice of writing was quite common and habitual. Further, the styles are so confirmed—they bear, as has been said, so plainly on their face the stamp of matured development that they cannot differ much from those of the fifth century B.C.; so that, as Dr. Mahaffy says, Euripides and even Aeschylus wrote down their plays with the same ease of penmanship as Shakspeare. But we are thus carried still farther back, and the irresistible conclusion is that the ordinary use of writing, as distinguished from inscriptions on stone or metal, was very much older in Greece than has been commonly supposed.

I have only been able to touch some of the leading points in Dr. Mahaffy's Memoir; his careful and elaborate treatment of details must be directly studied in order to be duly appreciated. If any of my hearers has doubts as to the great difficulty of the task he undertook, I will respectfully invite him to try his powers on the excellent reproductions of the papyri by the Autotype Company. The Memoir is an admirable piece of work, well deserving of being crowned by the Academy. In saying so, I only add my less competent testimony to that of some of the best European Græcists and Egyptologists. An eminent worker in the same field has reminded us, "*prima tentamina in re non bene perspecta optima esse, si mediocritatem attingant.*" In my judgment, Dr. Mahaffy has gone far beyond mediocrity: he has attained excellence. He has fully recognised the liberality of our Council which enabled him to publish promptly, and in fitting form and extent, the results of his labours. But, on our side, acknowledgments are due to him for having contributed to our Transactions a Memoir which possesses so much interest for scholars, and has so largely attracted the attention of the learned world.

### III.

The third Memoir of which I have to speak is that of Professor Haddon on "*The Decorative Art of British New Guinea.*" Savage art has only in recent times been the subject of systematic investigation; and many persons may be unaware that there is in existence

anything that deserves the name. But human nature is everywhere and at all times fundamentally the same; and even in very low stages of social progress the æsthetic craving shows itself. The savage is rarely satisfied with mere utility in the articles he uses; he aims at beauty according to his ideas of it. It is true that, in general, he does not represent objects in a purely disinterested way, nor does he idealise; his art is for the most part limited to the ornamentation of his arms and implements, and to some extent of the human person. The character of these early efforts will be conditioned by various circumstances. It will be dependent on the development of crafts, and the consequent multiplicity and variety, as well as the nature, of the tools at the artist's command, and also on the materials on which he operates; and when he uses colour, on his resources in pigments. Again, his art will be affected by religion, by the sacred figures, emblems, or instruments to be wrought or adorned. And the designs introduced will depend on the whole environment of the worker, on the character of the region in which he lives, and especially its fauna and flora. But it must not be assumed that everything which is familiar to the artist will be delineated. In some districts of New Guinea where animals abound they are scarcely ever represented; whilst in others a large number of forms are depicted. A ground for this diversity has been sought in the institutions of the several regions, particularly in the presence or absence of Totemism; but whilst these probably have some effect, there are doubtless deep-seated reasons in the psychological features of the different races which are too subtle to be traced. It is observed by Mr. Haddon that the abundance and richness of art is conditioned also by the material prosperity of the tribe. "A poor, miserable people has a poor, miserable art." A certain freedom from the cares of life is necessary for æsthetic culture. Where it flourishes in New Guinea, food is abundant, and men are well nourished; consequently vitality and energy abound. But even when material conditions are favourable, the spiritual faculty may be deficient. This is true of advanced races, and it is no less true of those which have lagged behind in the march of evolution.

In the study of the entire subject we are confronted by a special difficulty. It is often impossible from the vague indications in museums to ascertain accurately where a given object has been made; though the place where it was bought may be known, it may have

been produced elsewhere. There is, however, a circumstance which attenuates in some degree this difficulty—namely, the rigid conservatism of these retarded races, and the consequent fixity in the native art of each centre. “Patterns,” as Mr. Haddon says, “have a wonderful vitality,” and hence the locality may, in general, be safely inferred from the particular features of the work. This, however, is in turn liable to limitation; for certain simple patterns are found, not only in the different regions of New Guinea, but in various parts of the world, and the migrations of tribes may carry a form of art to a place which was not its native home. A case has even been found in which a kind of ornamentation previously unknown was introduced into one of the Torres Straits islands by a single native of a remote place who was shipwrecked on the coast. Such a fact shows that the conservatism of which I have spoken is not absolute; and the possibility of innovations is increased by the improved communication between districts which is now available, and by the contact of the natives with whites who visit their shores.

Examining the coast of British New Guinea, Mr. Haddon finds, in moving eastward along it, five successive districts, each of which appears to be characterised by a particular style of ornamental design. (There is a sixth district on the north-east side of the island, but scarcely anything is known respecting it.) Let me indicate these in the most general way. There is, first, the district facing Torres Straits, to which the islanders of the straits give the name of Daudai. Here the prevalent feature is straight and angled lines—the fundamental pattern being a zigzag between two parallel lines, which sometimes results in producing triangles or diamonds, and, by the rounding of the zigzags, semicircular forms. Animals are often represented, but always individually, not drawn in linear series, or grouped so as to tell a story. The forms, most commonly marine, are drawn with a fair amount of accuracy; and there are sometimes little touches which afford evidence of keen observation; the zoomorphs never degenerate into conventional patterns. Vegetable forms are rare.

Next follows the district about the delta of the Fly river. Here we have a free treatment of curved lines and spirals; also leaf designs; and, along with these, great skill in stone-carving.

Thirdly, comes the district bordering on, and behind, the Papuan gulf, from the delta of the Aird river to Cape Possession, marked by

circular spires which tend to pass into the square variety, and by the development of the meander pattern. Wooden belts are characteristic of the district, and the prevailing ornaments on them are conventionalised derivatives of human faces.

The fourth, which Mr. Haddon calls the Central district, is an extensive strip of territory, stretching from Cape Possession to Mullan's Harbour, and occupied by a variety of tribes. This division of the country is longest and best known, containing Port Moresby, the seat of government. It is marked by the prevalence of panels, which shows itself not only in the ornamentation of objects, but also in tattooing, which is largely practised by the women. The absence of human, and, in general, of animal, figures is a noticeable feature in the art of this region.

Fifthly, there is the Massim district, comprising the remainder of the south coast and the South-Eastern Archipelago, including the Louisiade, D'Entrecasteaux, and Trobriand groups of islands. Here curved lines abound; scrolls, spirals, loopcoils, and the guilloche are everywhere. Animal forms, which were not found in the Central district, reappear in this, the bird *motif* predominating. The art is on a higher plane as regards technique than in other districts; and there is a feeling for symmetry and a talent for adapting ornament to material which are not elsewhere seen in the same degree.

If we look at the inhabitants of these several districts from the Ethnological point of view, we shall be led to regard those toward the west of the Protectorate, whether on the mainland or in the islands, from Daudai to somewhere about Cape Possession, as Papuans, belonging to a race dark in colour, with frizzly hair, dolicocephalic, and rather small in stature. Notwithstanding these common physical characters, there are great diversities amongst the tribes, but, as a whole, they appear to be the aborigines of New Guinea. From Cape Possession to the furthest of the Louisiades, we find, mixed with Papuans in different degrees in different localities, what seems to be an immigrant population, more light-coloured than the Papuans. These people are sometimes spoken of as Malayans or Malayo-Polynesians; Mr. Haddon prefers to call them Melanesians, which implies their origin from the chain of islands off the east of New Guinea, extending to New Caledonia. He believes, however, in a more complex mixture than that of two races only. It is thought that Maiva, in the Central



district, is the extreme point reached by the Melanesian settlers. How far the artistic characteristics of the several districts along the coast are to be explained by racial origin is, I think, a question too complex for solution, at least in the present state of our knowledge.

Two notable facts may be mentioned respecting the art of the entire Protectorate—(1) picture-writing is unknown, and (2) celestial objects are not represented; it appears to be at a later stage of development that the heavenly bodies become interesting.

Mr. Haddon's memoir is not merely a monograph on the art of the tribes of the Protectorate; it is also a study of their character and condition from the anthropological and sociological points of view. The treatment of their art, indeed, leads naturally, in many instances, to a description of their customs. Thus, *à propos* of the instrument commonly known as the bull-roarer,<sup>1</sup> he gives an account of their remarkable mysteries and forms of initiation, which remind us of the more celebrated Greek institution, and recall Virgil's "*procul, o procul este profani.*" And, in connexion with the masks which some of the natives adorn so elaborately, he describes the ceremonial dances in which this singular costume is worn.

Speaking of these populations generally, we may say that they are in the fetishistic state, in which, with religions of that type, co-exists the lax form of political organization which usually accompanies them, where personal qualities—ability, experience, and supposed supernatural powers—are the foundation of ascendancy, and hereditary chieftainship is unknown or is found only in rudimentary form. We must not, however, conceive of them as representing the primitive man. They stand, as Mr. Haddon says, on a very low rung of the ladder of civilization, but not by any means on the lowest. Not only is agriculture practised among them, but the potter's art is carried on to a large extent, especially by the women, and fleets of canoes are equipped to carry its products along the shore to distant places, where they are exchanged for sago. The tribes which are warlike in their habits are those which are most energetic and contain the finest men; and our just horror of cannibalism must not hide from us the fact that those who have this shocking practice amongst them are often, perhaps generally,

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<sup>1</sup> On this instrument see Mr. Andrew Lang's interesting volume, "*Custom and Myth.*"

among the most enterprising and intelligent, and even among the foremost in art. It appears to be certain that, at least in recent times, cannibalism has not been caused by a deficiency of ordinary food. It might be supposed that it arose from a sentiment of savage triumph over an enemy; and there is a passage in the "Iliad" where such a feeling seems to show itself as a survival, where Zeus says to Hera that the only way in which she could satiate her rage against Priam and the Trojans would be by eating them raw. But according to Mr. Haddon, it is connected with the idea that by devouring your enemy you make yourself possessor of his fighting qualities. Only some of the New Guinea tribes are cannibals; others are revolted by the practice. And this is a case of a general fact which is very striking—namely, that there are remarkable varieties, within very limited areas, in manners and in the state of social development. The tribes in many cases, without being hostile, have little or no communication with each other, and do not readily adopt each other's customs or learn each other's arts. Readers of Max Müller's Lectures will remember how he brings out the fact of the multiplicity of different languages spoken by neighbouring tribes, some of them insignificant in number.<sup>1</sup> The same thing is observed in New Guinea, and not with respect to language only, but to their manners and arts in general, in which they rarely borrow from without, but adhere, as I have already said, to their local traditions.

The view of savage life presented to us discloses a scene very different from that composed by the imagination of Rousseau and his school. Peace and harmony do not prevail; the terrible saying, *Homo homini lupus*, is often exemplified. We read of tribes exterminated, or driven from their homes and reduced to the condition of vagrants, by the attacks of their enemies; and there is amongst entire populations a dreadful sense of insecurity arising from the recurrent visits of head-hunters. Yet the people have many amiable traits; they are most affectionate to their children; they often exhibit a marked respect for their parents and the aged generally;<sup>2</sup> and they respond by gratitude and goodwill to efforts for their good, as is eminently shown by the immense influence and popularity in the

<sup>1</sup> First Series, Lect. II.

<sup>2</sup> See Chalmers and Gill: "Work and Adventure in New Guinea," pp. 113 and 243.

whole country acquired by the kindly and protective action of the well-known missionary, Chalmers.

No summary which I could offer would give an adequate idea of the wonderfully copious body of materials which Mr. Haddon has brought together for the illustration of his subject from every available source—from British and Continental museums, and printed books or essays. To appreciate the extent and accuracy of his studies it would be necessary to go carefully through his Memoir, and I can assure you that in so doing you will reap both pleasure and profit. He has produced an excellent study of a comparatively new subject, and has shown a philosophic spirit and much sagacity in handling it; and his work well deserves to take its place beside the other notable Memoirs which we have honoured with the academic laurel.

And now, having completed the agreeable task of reviewing—I hope with due appreciation—these selected products of the intellectual activity of our body, I have an equally pleasing duty of a more personal nature to discharge. At the next meeting I shall vacate the Presidential Chair, and shall ask my successor to take it in my stead. I cannot do so without first returning—as I now beg to do—my hearty thanks to the Academy for the cordial support I have received in the performance of my duties from all our members, and in particular from the council and officers. And I should certainly do less than justice if I did not express my special obligations to the Secretary of the Academy for his ever-ready co-operation and aid. I have had frequent occasion to appeal to his accurate knowledge of the history and traditions of the Academy, and he has always most liberally placed that knowledge at my disposal, and has often guided my action by his judicious counsels. Of his services as editor of our “*Transactions*” and “*Proceedings*,” in bringing them out promptly and in attractive form, it is scarcely possible to speak too highly.

I will add only a few words respecting the general position and prospects of the Academy. I do not think that in recent years there has been any diminution of the activity of our members in the several fields we profess to cultivate. The large attendance at our meetings has shown the interest taken in our work. In entering on the Chair I expressed the hope that whilst mathematics would not lose their place amongst us, the physico-chemical and biological sciences would

come prominently forward during my term of office. With respect to at least the latter branch this hope has been amply fulfilled, and I trust the impulse already given will be maintained. A new series of investigations into the anthropology and social condition of the inhabitants of the more remote and less advanced districts of our island has been commenced, which is sure in the future to lead to important results. Several of our national monuments have been more thoroughly explored and more accurately described than ever before; and something has been done towards increasing the number of the ancient structures which have been taken under the care of the public, and will thus be saved from the consequences of violence or neglect. A steady effort has been made towards obtaining a more complete and effective exhibition of the treasures of our collection in the Museum of Science and Art. The edition of the *Annals of Ulster* is within measurable distance of completion. The preparation of the *Book of Armagh* for publication is well advanced; the Gospels, I was some time since informed, will be in type before the close of my presidency, and the entire printing is expected to be completed within the present year. The greatest of our enterprises in the field of Celtic literature—namely, the *Irish Dictionary*—continues to make progress; but it has been retarded by the limitation of our resources. A communication was made to me just before my election as President respecting a handsome contribution to our funds, in the shape of a sum left on trust to be devoted to this work, but the Academy has not received the gift. The exact nature of the communication, and the subsequent circumstances arising out of it, ought, of course, to be made known to the Council, and it will be my duty, before the end of my official term, to submit a statement of the facts to that body, with which will then rest the determination of the action to be taken in relation to the matter.

Within our house we have now collected portraits of many distinguished men who have sat in the Chair which I less worthily occupy. To speak only of those whom I have known in the course of my Academic experience—Hamilton, Robinson, Todd, Graves, Kane, Ferguson, Haughton, and Reeves now look down upon us from our walls. On those who will come after us the pictured presence of these intellectual ancestors must have an elevating and

inspiring influence. There are others I would gladly see represented in the group; and I commend to my fellow-Academicians the duty of thus perpetuating amongst us the memory of Humphrey Lloyd, of Jellett, and of Stokes.

There is a fine poem of Schiller's, well, though somewhat freely, translated by our own Clarence Mangan, in which, speaking to his fellow-countrymen at a time when Germany stood in several respects below the neighbouring nations, the poet owns this inferiority; we have not, he says, the material resources or the busy life of commerce, which others can boast; but there are things, he adds, which console us for our deficiencies—

“Our hearts  
Are still the home of Science and the Arts,  
And glow and gladden in the light they give.”

That is the hope I cherish for Ireland, that, though material wealth may be denied her, she may be rich in the things of the mind, that the bright intellect and the fine feeling of our people, duly cultivated and directed aright, may win back the early reputation of our country as a dwelling-place of peaceful study, and a centre of beneficent influence. And with this I join the further and kindred hope that this Academy, retaining its position as one of the foremost of Irish institutions, may long continue to be a home of high thought and graceful culture, where our successors will meet in friendly union, as we have done, to study, according to the three-fold design of our foundation, the truths of Science, the treasures of Literature, and the memorials of the past.

At the conclusion of the President's Address, His Excellency the Lord Lieutenant said—

Mr. President and gentlemen, I rise with some diffidence and with many misgivings to perform a duty which I believe is conferred on me by reason of the fact that, owing to the official position which I have the honour to hold, I am Visitor to this distinguished Academy. I have been requested to move a resolution in the following words:—

“That the best thanks of this Academy are hereby given  
to the President for his address.”

Now, gentlemen, it would be obviously futile on my part to attempt to lead you into a discussion on the personal merits of our

distinguished President, especially in his presence. I might, of course, remark that everyone in this room would be better qualified than I am, by long personal acquaintance with that distinguished man, to enlarge on his great abilities, and on the services which he has conferred on his country. But, although that may be so, it must be remembered that Dr. Ingram's reputation is world-wide. It is not necessary to have been a native or an inhabitant of Dublin or of Ireland in order to thoroughly realise what his qualifications are to enlist your admiration and your gratitude.

I may, perhaps, be allowed to remark very briefly on the admirable address which the President has delivered. He has, in his exhaustive remarks, referred to three different works of very eminent gentlemen, professors in Dublin, and there is very little left for me to add on these subjects, even if I were qualified to say anything on them. With regard to the first, that of Professor Cunningham, which deals with the subject of the anatomy of the cerebrum, for obvious physical reasons I am less interested in that subject than all of you distinguished gentlemen here present. With regard to the second subject—viz. the memoir written by Dr. Mahaffy on the Flinders-Petrie Papyri—a subject in which he has been such an energetic discoverer—there is only one remark I should like to make, and that is with reference to a sentence in the President's address, where he said:—

“On a general survey of these materials one broad general conclusion forces itself upon us—namely this, the handwritings, whether the literary or the less formal, show so much facility, boldness, and variety that plainly the practice of writing was quite common and habitual.”

Now, gentlemen, the President said something about the ingenuity of Dr. Mahaffy's conjectures on various points which he discusses in his paper, but if Dr. Mahaffy or anyone else is bold enough to endeavour to arrive at any sound conclusion on the subject of handwriting by the fact that the “practice of handwriting is common and habitual,” I can only say that, from my own experience, the merits of the handwritings of our fellow-men of the present day are in the exact inverse ratio to the amount of the practice in writing which they have had. If I had thought the subject was going to be discussed I think I could have brought here various specimens of letters which I have had the honour to receive within the last few weeks

which would puzzle even Dr. Mahaffy as to their origin and the date of their execution.

I pass on from that to what after all is at the present moment of the greatest interest to us. There is an *amari aliquid* which we must all feel in passing a vote of thanks to our distinguished President, because, as he has told us, within a very few days he is about to resign the presidential chair which he has adorned, and to ask a successor to fill his place. Again, I say, that probably no one is less qualified here than I am to properly enumerate the various services for which this Academy has to thank its distinguished President; but I do hope he will allow me to express my deep and sincere regret that we are about to lose him as President of the Irish Academy.

The President then passed on to some remarks on the subject of the general position and prospects of the Academy; and I think we may all say that, coming from so high an authority, these statements are eminently satisfactory to those who wish well to that distinguished society.

With regard to the most eloquent words with which the President concluded his address, he quoted some well known lines of Schiller's, in which the great poet, while owning the inferiority of his nation in matters of material prosperity, business, and commerce, yet declared that their hearts

Are still the home of Science and the Arts,  
And glow and gladden in the light they give.

Well, I venture to think that the study and the consequent success of the culture of science and art in any country cannot be entirely divorced from the material resources, business, and commerce of this life. And, indeed, I notice that Dr. Haddon appears to be of the same opinion, for, in a passage quoted by the President, he says—

“It is observed that the abundance and richness of art is conditioned also by the material prosperity of the tribe. A poor miserable people has a poor miserable art. A certain freedom from the cares of life is necessary for æsthetic culture.”

I believe that these two passages taken together sum up the conditions under which alone science and art can continue to thrive in any country. But I am not prepared to admit, as Schiller did of his country, that Ireland is to continue in a position of inferiority in

the matter of material resources, or of wealth and prosperity. I am sanguine enough to believe that we already see some symptoms of a distinct and decided and even a rapid improvement in the material prosperity of this country; and I trust, as I am sure you, gentlemen, all trust, that one of the first, and certainly one of the most important and one of the brightest results of such a return to prosperity would consist in the fact that those subjects in which you are deeply interested, and art and science generally, may receive an ever-increasing degree of material encouragement, without which it is impossible that they can be properly promoted. I hope that this Academy will long continue to foster the studies which it has so nobly encouraged; and I cannot conclude with any better or higher wish than this—that Ireland may never be wanting in distinguished sons like our President, who has spent an illustrious life in the culture of these scientific, literary, and artistic pursuits, the development of which is the real object of the foundation and existence of this great Academy.

Sir John Banks seconded the resolution, and said—

I esteem it a very great honour to have been asked to second this vote of thanks, following his Excellency, who has proposed it in such graceful and gracious terms. The Royal Irish Academy has since its foundation been fortunate in having for its Presidents men of whom Ireland may well be proud. The president has spoken of some of his immediate intellectual predecessors, and I am sure we are all happy to see here this evening two of those intellectual predecessors, my honoured friends Dr. Graves the Lord Bishop of Limerick and Dr. Haughton. To the names that the President has mentioned I would venture to add the great names of Charlemont, Brinkley, and Bartholomew Lloyd. The President says that he less worthily fills the chair which has been filled by his predecessors; now, I venture to say that the unanimous vote of the Academy would tell that he well and worthily fills it, and that the name of Ingram will be added to the roll of illustrious Presidents.

The President has spoken of the portraits that look down upon us from these walls; and I should like to say that the best portraits are the portraits of the Bishop of Limerick and Dr. Haughton. And the cause is not far to seek. The accomplished artist had the



living men before her, the others were done from photographs. I would, therefore, throw out the suggestion to the Members of the Academy that the portrait of the President—of him who so worthily fills the chair—should be painted from the life, and not left to our successors at some, I trust very remote, period to have it taken from a photograph.

I need not say with what very great pleasure I second the vote of thanks to the President for his address, which has been proposed by the Lord Lieutenant. His Excellency, in honouring the Academy with his presence here this evening, is performing one of the many and multifarious duties, and, I trust, not the least pleasing, that appertain to his high office ; for under the Royal Charter by which the Academy was formed the post of Visitor was assigned to the Chief Governor of Ireland.

The Lord Lieutenant in putting the resolution, said—

I am asked to perform the very unnecessary duty of putting the resolution to the Meeting. I will not do it in the ordinary form, for I see it is the wish of everyone that the resolution should be carried with acclamation.

The President, in acknowledging, said—

I thank your Excellency for the very kind expressions which fell from you respecting me ; and I also thank Sir John Banks for what he was good enough to say, though I fear what he said was rather dictated by his friendship for me than by any merits which I may have. I wish also to thank your Excellency on the part of the Academy. As has been mentioned by yourself and Sir John Banks, you are, by virtue of the high office which you fill in this country, Visitor of the Academy. You have not allowed that title to remain a dead letter. You have, as I know, inspected our antiquarian collections in the Museum of Science and Art ; and on this occasion you have had the gracious thought of coming amongst us on the occasion of one of our meetings, and personally taking part in our proceedings. In the name of the Royal Irish Academy, I beg to tender to your Excellency our respectful thanks.

MONDAY, MARCH 16, 1896.

(STATED MEETING.)

DR. J. K. INGRAM, S.F.T.C.D., President, in the Chair.

Colonel G. T. Plunkett and Mr. C. Litton Falkiner signed the Roll, and were admitted Members of the Academy.

The President declared the ballot open for the election of President and Council for the coming year, and for the election of Honorary Members.

Dr. J. T. Gilbert proposed, and Professor G. F. Fitz Gerald seconded, the Earl of Rosse, K.P., for the office of President.

Master Pigot and Mr. J. E. Gore were appointed Scrutineers of the ballot for President and Council, and the Treasurer and Secretary of the ballot for Honorary Members.

The Secretary of Council read the following

REPORT OF THE COUNCIL FOR THE YEAR 1895-96.

Since the date of the last Report the following Publications of the Academy have been issued :—

*Transactions*, vol. xxx.

Part 16. "The Theory of Linear Vector Functions." By Charles J. Joly, M.A., F.T.C.D.

Part. 17. "On the Cytology of the Vegetative and Reproductive Organs of the Saprolegniæ." By Marcus Hartog, M.A., D.Sc., Professor of Natural History, Queen's College, Cork.

*The Todd Lecture Series.*

Vol. vi. Rev. Edmund Hogan, S.J., F.R.U.I. : "The Irish Nennius from L. na Huidre and Homilies and Legends from L. Brece." Alphabetical Index of Irish Neuter Substantives.

*Proceedings.*

Of the *Proceedings*, Third Series, Part 4 of Vol. III., was published in December, 1895, and contained the following Papers :—

"On a Pandean Pipe from Tanna Island, New Hebrides." By Professor J. P. O'Reilly, and E. E. Fournier d'Albe.

"On the Crystalline Form of Riebeckite." By W. J. Sollas, LL.D., D.Sc., F.R.S., Professor of Geology and Mineralogy in the University of Dublin.

- "Note on Defective Vision and other Ocular Derangements in Cornelius Magrath, the Irish Giant." By H. R. Swanzy, A.M., M.B., F.R.C.S.I.
- "Three Poems in Middle-Irish, relating to the Battle of Mucrama." With English Translation and Notes, and a short Vocabulary. By John Mac Neill, B.A.
- "The Oratory of Gallerus." By Rev. Thomas Olden, M.A.
- "On the Position of Encke's Comet, as deduced from Photographs taken by Mr. W. E. Wilson." By Arthur A. Rambaut, D.Sc. F.R.A.S., Royal Astronomer of Ireland.
- "On the Orientation of Certain Dolmens recently discovered in Catalonia." By Professor J. P. O'Reilly.
- "Quartz, Quartz-Rock, and Quartzite." By George Henry Kinahan.
- "The Ethnography of the Mullet, Inishkea Islands, and Portacloy, County Mayo." By Charles R. Browne, M.D.
- "Third Report on the Prehistoric Remains from the Sandhills of the Coast of Ireland." By W. J. Knowles.
- "On the Rotifera of the County Mayo." By John Hood, F.R.M.S., Dundee.
- "On the Chromosomes of *Lilium longiflorum*." By H. H. Dixon, B.A., Assistant to the Professor of Botany, Trinity College, Dublin.
- "Note on the Nuclei of the Endosperm of *Fritillaria imperialis*." By H. H. Dixon, B.A.

The following Publications are in the Press :—

- Part 18.—"On a Volcanic Neck, of Tertiary Age, in the county of Galway." By Professor Sollas, D.Sc., F.R.S., and A. Mc Henry.
- Part 19.—"On Scalar Invariants of two Linear Vector Functions." By Charles J. Joly, M.A., F.T.C.D.
- Part 20.—"On Species of *Phoxocephalus* and *Apherusa*." By W. T. Calman, B.Sc., University College, Dundee.

The following Science Grants, recommended by the Council, have been sanctioned by the Academy :—

- £45 to a Committee, consisting of Dr. R. F. Scharff, Dr. E. J. Mc Weeney, Professor T. Johnson, Messrs. R. L. Praeger, R. M. Barrington, G. Pim, G. H. Carpenter, R. J. Ussher, F. W. Moore,

D. McArdle, A. R. Nichols, and Professor E. P. Wright, to assist them in continuing their Researches into the Fauna and Flora of Ireland.

£20 to a Committee consisting of Rev. Dr. Haughton, Professor D. J. Cunningham, Professor A. C. Haddon, and Dr. C. R. Browne, to assist them in carrying on the work of the Anthropometrical Laboratory, and the Ethnographical Survey of the remote districts of Ireland.

£20 to Dr. J. T. Gilbert, to assist in the preparation of a Bibliography of the Works of Irish Authors, from the 15th to the 18th century, especially of many rare and valuable works published on the Continent.

£10 to Mr. G. Coffey, to assist him in a Systematic Investigation of the Irish Sepulchral Urns.

£5 to Professor W. J. Sollas and Mr. R. L. Praeger, to assist them in investigating the Glacial Deposits of Central Ireland.

The following Members have been elected since 16th March, 1895 :—

Francis Elrington Ball.

Patrick J. Barry, L.R.C.S.I., L.K.Q.C.P.I.

Ramsay Colles.

Samuel William Percy Cowan, M.A.

Cæsar Litton Falkiner, M.A.

Rev. William Spotswood Green, M.A.

Hubert Thomas Knox.

Lieut.-Colonel Thomas Ainslie Lunham, M.A.

Rev. James Edward Harnett Murphy, M.A.

Rev. Hugh O'Reilly.

Lieut.-Colonel George T. Plunkett, F.R.G.S.

At the Stated Meeting, on the 16th March, 1895—

Karl Weierstrass,

Emil Heinrich Du Bois-Raymond,

Eduard Suess,

were elected Honorary Members in the Section of Science.

And—

Adolf Erman,

Eduard Zeller,

Lieut.-General Augustus H. L. F. Pitt Rivers,

Samuel Rawson Gardiner,

in the Section of Polite Literature and Antiquities.

The Academy has lost by death within the year thirteen Members:—

Valentine Ball, LL.D., C.B., F.R.S., elected 11th June, 1883.

Most Rev. Michael Comerford, D.D., elected 13th February, 1882.

William John Fitz Patrick, LL.D., F.R.S.A., elected 11th January, 1875.

Robert Galloway, F.C.S., elected 13th May, 1878.

Rev. James Goodman, M.A., elected 22nd June, 1885.

Right Hon. George Stephens, Viscount Gough, M.A., D.L., elected 25th May, 1836.

Thomas Maxwell Hutton, D.L., elected 11th June, 1866.

Maurice Lenihan, elected 12th April, 1869.

Alexander Goodman More, F.L.S., elected 9th April, 1866.

Very Rev. Francis O'Brien, elected 12th December, 1887.

Dixon Cornelius O'Keeffe, M.A., elected 12th May, 1890.

Sir George Hornidge Porter, Bart., M.D., elected 11th January, 1875.

Robert George Watts, M.D., F.R.S.L., elected 10th January, 1881.

The Academy has also lost by death three Honorary Members in the Section of Science:—

James Dwight Dana, elected 15th March, 1873.

Right Hon. Thomas Henry Huxley, elected 16th March, 1874.

Louis Pasteur, elected 16th March, 1878.

And one Honorary Member in the Section of Polite Literature and Antiquities:—

George Stephens, elected 15th March, 1884.

Of the "Annals of Ulster," vol. iii., completing the Text and Translation, has been published, and the Editor, Rev. Dr. Mac Carthy, is engaged in the preparation of an Index to the work which it is hoped will be published, together with the Preface and Introduction, during the incoming Academic year.

The Council have to regret that in September, 1895, Mr. W. J. Purton was compelled from ill-health to resign his position as Assistant to the Editor of the "Irish Dictionary," and his place has not yet been filled up.

The photolithography of the "Yellow Book of Lecan" is now finished, and the work will be published immediately.

On the 22nd of January the Committee appointed for that purpose held their Annual Visitation of the Academy's Collections in the Museum of Science and Art, and their Report has been duly presented to the Council. The most important matter included therein had reference to the urgent necessity for increased space. The two rooms originally allocated to the Academy's Collections have been found by experience to be quite insufficient for their display; the Council, however, hope that in a short time considerable additional accommodation will be provided.

The following are the principal additions to the Academy's Museum during the year :—

Prehistoric stone and flint implements recently found in the sand-hills on the Northern Coasts of Ireland.

Flint arrow-heads from county Londonderry.

Sandstone cup from county Antrim.

Iron broadsword found at Murgasty Hill, county Tipperary.

A series of encaustic floor-tiles from the Church of SS. Peter and Paul, Trim.

Silver wheel-brooch, with amber settings, found in 1875 between Edenderry and Philipstown.

Wheel-brooch of "findruin" with jewel settings.

Silver mediæval fibula, embossed, found near St. Mary's Abbey, Trim.

Silver goblet, with engraved ornamentation, found in the ruins of St. Mary's Abbey, Trim.

Silver-plated copper breastplate, with inscription.

Copper celt from county Antrim.

Five gold penannular objects, with decorated cup-extremities, from county Waterford. (Deposited by W. G. D. Goff, Esq.)

The Library during the past year has received some interesting donations. A considerable amount of bookbinding has been executed, especially in connexion with the publications of learned Societies, access to which has thus been much facilitated to those engaged in research. The revision of the catalogue of printed books has also been continued.

By the death of Mr. A. G. More the zoologists and botanists of Ireland have lost an authority in whom they almost implicitly relied

on the subject of the determination of Irish birds and plants. His "List of Irish Birds" (1885) and the "Cybele Hibernica" (published in conjunction with Dr. David Moore in 1866) may be regarded as types of the kind of work in which he excelled; careful and accurate studies furnishing an admirable basis for the future progress of scientific investigation in these branches of knowledge.

In 1867 Mr. More was appointed Assistant in the Natural History Museum, Dublin, and in 1881, on the death of Dr. Carte, he was appointed Curator of the Natural History Department of the Museum of Science and Art, a post which he occupied till his retirement from ill health in 1887. His labours in immediate connexion with the Academy were confined to the preparation of Reports on the Flora of Ireland, which appear in the *Proceedings, Royal Irish Academy*, Second Series, vol. II., p. 256 sqq., and p. 553 sqq. The Academy elected him a Member of its Council in 1883, which he continued to be until his retirement, from ill health, in 1887.

In the death of V. Ball (born 1843, died 1895) the Academy has lost one of its most respected Members, and one of its most zealous friends. The great change in the removal of the priceless Antiquarian treasures from the Academy House, to the new Science and Art Museum, could not have been effected under a Director more acquainted with their value, or more kindly disposed to the body that had consented to their deposit in the new building. The direction of a great Museum was a field peculiarly fitted to Dr. Ball's wide experience, gained in no mere library study, but in the course of a life of constant and varied labour. His appointment on the Geological Survey of India, in 1864, introduced him into a wide sphere of opportunities, of which he was prompt to take advantage, as his numerous writings prove. For not only were his special duties as Geological Surveyor performed in a manner that steadily increased his reputation, but his keen trained eyes enabled him to utilize his rare opportunities in many other spheres of knowledge; he devoted much attention to the birds of India, wrote much and well on the multifarious products of the jungle, and attracted the notice and interest of students of anthropology by his observations on the characteristics and peculiarities of the native tribes of India with whom he came into contact, and with whom he was specially fitted to deal by his promptness and resourcefulness in action, and by his warm and constant sympathy. His more especial work as a

geologist was so highly valued, that the University of Dublin appointed him as its Professor of Geology and Mineralogy in 1881, on the resignation of that chair by Rev. Dr. Haughton. This post Dr. Ball filled with distinction, but he held it only for a short space of time, for within two years, the very congenial position of Director in the National Museum was conferred on him, and to the task of developing this Museum he addressed himself with his energy and singleness of heart. Yet he never lost sight of his old studies, and wrote many papers on the various branches of science on which he possessed special knowledge, some of which have appeared in our *Transactions* and *Proceedings*.

Of the general excellence of his work, the best guarantee is to be found in his election to the Royal Society of London, in 1882, and in the honorary degree of Doctor of Laws, which was conferred on him by the University of Dublin, in 1889. With most of the Scientific Societies of Dublin he stood in close and intimate relation. He was for many years the Secretary of the Royal Zoological Society of Ireland, and took a deep interest in its maintenance and prosperity. In 1886 he was elected to the Council of the Royal Irish Academy, and held his seat as Member of Council till his death, which took place on June 15, 1895.

The following Papers by Dr. V. Ball were published by the Academy :—

*Transactions.*

1886.—“Observations on Lion-breeding in the Gardens of the Royal Zoological Society of Ireland.”

1893.—“On a block of Red Glass Enamel said to have been found at Tara Hill.” (A joint Paper with Margaret Stokes).

*Proceedings.*

1883.—“On some Brass Castings of Indian Manufacture.”

1884.—“On the Identification of the Animals and Plants of India which were known to early Greek Authors.”

1887.—“Further Notes on the Identification of the Animals and Plants of India which were known to early Greek Authors.”



1890-91.—“A Commentary on the Colloquies of Garcia de Orta on the Simples, Drugs, and Medicinal Substances of India.” (Parts I. and II.)

1893.—“On the Volcanoes and Hot Springs of India and the Folk-Lore connected therewith.”

1894.—“A description of two large Spinel Rubies with Persian Characters engraved upon them.”

The Secretary, for Mr. W. F. Calman, B.Sc., read a Paper on “Some Deep-sea Crustacea from the South-West of Ireland.” [Communicated by Dr. E. P. Wright.]

Mr. George Coffey exhibited:—

1. “A full-sized Drawing of an Inscribed Stone at New Grange, Co. Meath.”

2. “Photographs of objects from the ‘Dowris Find,’ King’s County, in the Collection of the British Museum.”

On the Report of the Scrutineers the President declared the following duly elected:—

PRESIDENT.

THE EARL OF ROSSE, K.P., F.R.S.

COUNCIL.

*Committee of Science.*

Edward Perceval Wright, M.D.

Francis A. Tarleton, LL.D.

Benjamin Williamson, D.Sc., F.R.S.

J. P. O’Reilly, C.E.

George L. Cathcart, M.A.

George Henry Kinahan, C.E.

Rev. Samuel Haughton, M.D., F.R.S.

William J. Sollas, D.Sc., F.R.S.

Robert F. Scharff, B.Sc., PH.D.

Arthur A. Rambaut, M.A., D.Sc.

Greenwood Pim, M.A.

*Committee of Polite Literature and Antiquities.*

Robert Atkinson, LL.D.  
Rev. Maxwell H. Close, M.A.  
John T. Gilbert, LL.D., F.S.A  
William Frazer, F.R.C.S.I.  
Rev. Denis Murphy, S.J., LL.D.  
Louis C. Purser, M.A., Litt.D.  
Most Rev. Bishop Donnelly, D.D.  
Lord Walter FitzGerald.  
Rev. J. H. Bernard, D.D.  
John Kells Ingram, LL.D.

On the Report of the Scrutineers, the following were declared duly elected as Honorary Members :—

*In the Section of Science.*

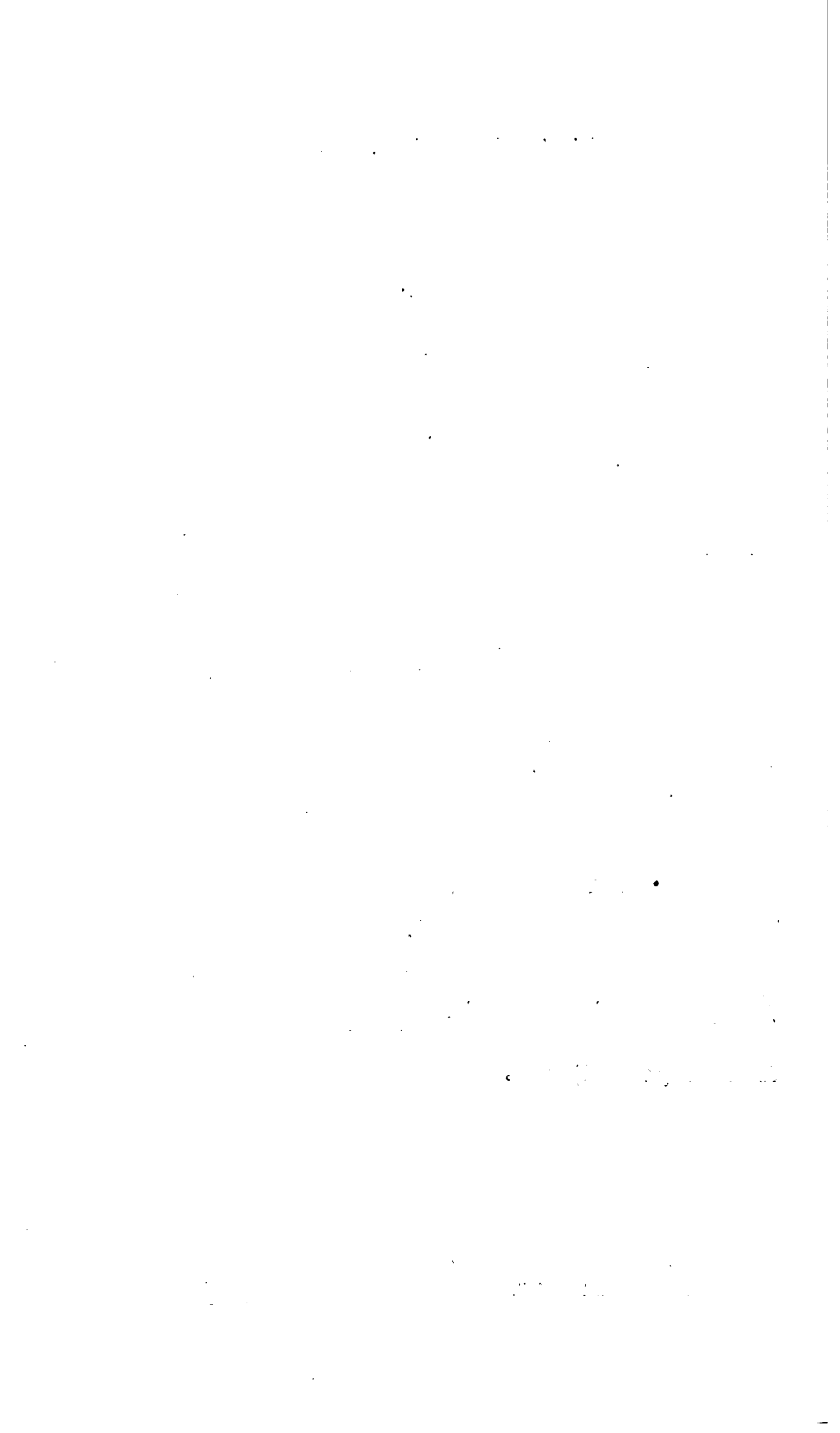
William Ramsay, F.R.S.  
Rev. Thomas George Bonney, F.R.S.  
Sir William Flower, K.C.B., F.R.S.

And Sir Joseph Lister, Bart., President of the Royal Society, was proclaimed an Honorary Member under By-Law 14, Chapter II.

The ballot was opened for the election of Officers, and, on the Report of the Scrutineers, the following were declared duly elected :—

TREASURER—Rev. M. H. Close, M.A.  
SECRETARY—Ed. Perceval Wright, M.D.  
SECRETARY OF THE COUNCIL—Robert Atkinson, LL.D.  
SECRETARY OF FOREIGN CORRESPONDENCE—Joseph P. O'Reilly, C.E.  
LIBRARIAN—John T. Gilbert, LL.D.  
ASSISTANT SECRETARY—Robert Macalister, LL.B.

The Academy then adjourned.



Royal Irish Academy.



GENERAL ABSTRACT OF THE ACCOUNTS.

FROM

*1st April, 1895, to 31st March, 1896.*

ROYAL IRISH

GENERAL ABSTRACT OF THE ACCOUNT OF REV. MAXWELL  
FOR THE YEAR ENDING

RECEIPTS.		Total of each Class.
Balance from last Year,	£ s. d. 17 4 8	£ s. d. 17 4 8
<b>PARLIAMENTARY GRANTS:—</b>		
General grant in aid, . . . . .	1500 0 0	1500 0 0
[For Treasure Trove Account see below.]		
<b>MEMBERS' PAYMENTS:—</b>		
Entrance Fees, . . . . .	57 15 0	
Annual Subscriptions, . . . . .	276 3 0	
Life Membership Compositions, . . . . .	117 12 0	451 10 0
Science Grant returned by Grantee, . . . . .	20 0 0	20 0 0
<b>PUBLICATIONS SOLD:—</b>		
Transactions and Cunningham Memoirs, . . . . .	28 10 3	
Proceedings, . . . . .	2 11 4	
Irish Facsimiles, . . . . .	7 7 0	
Todd Lectures, and Irish MSS. Series, . . . . .	12 12 0	51 0 7
<b>ANNALS OF ULSTER:—</b>		
Refund by Government, . . . . .	425 12 0	425 12 0
<b>INTEREST ON INVESTMENTS:—</b>		
Life Composition—2½ per Cent. Consol. Stock, . . . . .	102 1 4	
Cunningham Bequest—2½ per Cent. Consol. Stock, . . . . .	70 10 8	
Geological Illustration Fund—2½ per Cent. Consol. Stock, . . . . .	14 9 2	187 1 2
	£2652 8 5	2652 8 5

**TREASURE TROVE**

	£ s. d.
Balance from last year, . . . . .	271 10 11
Grant 1895-6, . . . . .	100 0 0
	£371 10 11

**TODD MEMORIAL**

	£ s. d.
Interest on investments, . . . . .	41 2 6
	£41 2 6

I certify that the above account is correct, according to the best of

EMY.

SE, TREASURER OF THE ROYAL IRISH ACADEMY,  
MARCH, 1896.

PAYMENTS.			Total of each Class.		
			£	s.	d.
<b>SCIENTIFIC AND LITERARY PURPOSES:—</b>					
Scientific Reports, . . . . .	120	0 0			
Library, . . . . .	294	10 1			
Irish Scribes, . . . . .	143	0 0			
Printing Preface and Index of Annals of Ulster, . . . . .	257	0 0			
Do. Transactions and Proceedings and Cunningham Memoirs, . . . . .	354	11 7	1169	1	8
<b>ESTABLISHMENT CHARGES:—</b>					
Salaries, . . . . .	369	0 0			
Wages and Liveries, . . . . .	220	5 4			
Furniture and Repairs, . . . . .	6	10 11			
Fuel and Gas, . . . . .	60	11 5			
Insurance, . . . . .	8	2 6			
Stationery, . . . . .	10	13 5			
Printing (Miscellaneous), . . . . .	60	2 9			
Postage, . . . . .	15	18 7			
Freights, Incidentals, and Contingencies, . . . . .	26	3 4	777	8	3
<b>ANNALS OF ULSTER:—</b>					
Paid on Account of Editing and Printing Vol. III., . . . . .	425	12 0	425	12	0
<b>INVESTMENTS (CAPITAL):—</b>					
	Stock Bought.	Description.	Total Stock.		
Life Membership Com- positions, . . . . .	£ s. d. 246 12 2	Gov. 2½ Stock,	£ s. d. 4124 12 6	270 18 0	270 18 0
Cunningham Fund, . . . . .	— — —	Do. do.	2653 9 9		
Geological Illustration Fund, . . . . .	— — —	Do. do.	435 7 4		
Todd Memorial Fund, . . . . .	— — —	Do. do.	1567 2 3		
Balance to Credit, . . . . .			9 8 6	9 8 6	
			£2652 8 5	2652 8 5	

NT.

	£	s.	d.
Treasure Trove purchased, . . . . .	42	11	0
Balance to credit, . . . . .	328	19	11
	£371	10	11

NT.

	£	s.	d.
Salary of Todd Professor, . . . . .	40	0	0
Balance, . . . . .	1	2	6
	£41	2	6

ledge and belief.—MAXWELL H. CLOSE, *Treasurer, R.I.A.*—

[For Auditors' Report see next page.]

## AUDITORS' REPORT.

We have examined the above General Abstract, and compared the Vouchers for the details of the several heads thereof, and find the same to be correct, leaving a Balance to the credit of the Academy's General Account of Nine Pounds Eight Shillings and Six Pence, and to the Treasure Trove Account of Three Hundred and Twenty-eight Pounds Nineteen Shillings and Eleven Pence, and to the Todd Memorial Account of One Pound Two Shillings and Sixpence, making in all a Balance of Three Hundred and Thirty-nine Pounds Ten Shillings and Eleven Pence.

The Treasurer has also exhibited to us Certificates, in respect of the invested *Capital*, showing that the amounts of Stock standing in the name of the Academy were Two Thousand Six Hundred and Fifty-three Pounds Nine Shillings and Nine Pence,  $2\frac{3}{4}$  per Cent. Consolidated Government Stock, Account A, being the Capital of the "Cunningham Fund"; Four Thousand One Hundred and Twenty-four Pounds Twelve Shillings and Six Pence,  $2\frac{3}{4}$  per Cent. Consolidated Government Stock, Account B, being Capital derived from Life Compositions; and Four Hundred and Thirty-five Pounds Seven Shillings and Four Pence,  $2\frac{3}{4}$  per Cent. Consolidated Government Stock, Account C, being the Capital of the Geological Illustration Fund. Like Certificates have been exhibited to us showing a sum of One Thousand Two Hundred and Nine Pounds Eighteen Shillings and Four Pence,  $2\frac{3}{4}$  per Cent. Consolidated Government Stock, in the Court of Chancery, and a sum of Three Hundred and Fifty-seven Pounds Three Shillings and Eleven Pence,  $2\frac{3}{4}$  per Cent. Consolidated Government Stock, standing in the name of Trustees, which together form the Invested Capital of the "Todd Memorial Fund."

(Signed),      { W. REYNELL, } *Auditors.*  
                              { HENRY KING, }

17th April, 1896.







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